Evaluation of Regulation (EU) No 913/2010 of the European Parliament and of the Council of 22 September 2010 concerning a European rail network for competitive freight

Evaluation support study – Final Report

Study under Framework MOVE/A3/2017-257

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Table of contents

List of figures

List of tables

ABSTRACT

This report presents the findings of the support study of the evaluation of Regulation (EU) No 913/2010 of the European Parliament and of the Council of 22 September 2010 concerning a European rail network for competitive freight (the "Regulation"). The Regulation establishes rules for selection, organisation, management and the indicative investment planning of freight corridors.

The study examines the relevance, effectiveness, efficiency, coherence and EU added value of the Regulation. The analysis is based on data collected from a range of primary and secondary sources, as well as direct input from concerned stakeholders that was collected using interviews and surveys with national authorities, the rail industry and an open public consultation.

The study concludes that the Regulation has been implemented as far as the designation, governance, investment and management of the freight corridors is concerned. In general, the relevant stakeholders have fulfilled the provisions in a formal sense and within their actual scope. Viewed on its own, however, the Regulation has had a relatively limited impact in achieving its general, specific and operational objectives and has not led to a broad adoption of its tools, and so has delivered the intended effects only to a limited extent.

EXECUTIVE SUMMARY

The objective of the evaluation support study was to provide a sound assessment of the impact of Regulation (EU) No 913/2010 on the international rail freight sector. The methods applied are coherent with the Better Regulation[1] Guidelines of the European Commission. The study is based on three main pillars: extensive desk research, a thorough data analysis and a consultation of the stakeholders involved at different levels in the sector.

The provisions of the Regulation have led to the publication of a number of reporting documents. In particular, each freight corridor has issued at regular intervals (updated where necessary) specific documents, such as its implementation plan, the corridor information document and its implementation reports. In addition, each corridor has produced a transport market study, performance monitoring reports and customer satisfaction surveys. Not least, the annual report of each freight corridor contains a summary of all of the activities carried out on a yearly basis. Thanks to the availability of such documents, it is possible to track the way in which developments have occurred.

On the other hand, despite such a large number of documents having been produced, the heterogeneity of information found across the reports and the low availability and quality of quantitative data makes it difficult to analyse and compare performance across freight corridors. To address this lack of information, RailNetEurope data have been used, mostly extracted from the two IT systems that are used to manage and monitor international rail freight traffic, namely the path coordination system (for indicators on capacity allocation) and the train information system for data on the operational performance of trains running along the corridors.

A key element of the evaluation was the consultation activities involving the relevant stakeholders, which was carried out using different approaches:

- targeted survey questionnaires;
- targeted interviews in the context of the case studies; and
- an open public consultation conducted by the Commission.

This consultation strategy allowed the opinion of a large number of stakeholders (i.e., more than 130 responded to the survey questionnaire and more than 40 were interviewed directly) to be gathered and the points of view from different perspectives to be understood.

Implementation of the Regulation

The analysis performed indicates that the establishment of freight corridors within EU legislation has led to significant changes in the European railway community. The main achievements can be summarised as follows:

- full implementation of the provisions of the Regulation for the establishment of freight corridors and governance bodies; besides such basic requirements, a remarkable effort has been deployed to coordinate different activities (e.g., working groups, network of executive boards, common framework for capacity allocation, etc.). As a drawback, it appears that not all of the relevant stakeholder groups have benefited from the same level of engagement, or have been involved in the most effective manner;

[1] See https://ec.europa.eu/info/sites/info/files/better-regulation-guidelines.pdf.

- with respect to the documents required to develop the freight corridors (i.e., the transport market studies and the implementation plans), although many corridors have fulfilled the initial provisions by producing these reports, they have been updated only for few corridors. Furthermore, it is worth reporting that the transport market studies do not have a common structure, which makes them hard to compare in terms of indicators and outputs;
- the freight corridors have implemented the main tools for capacity allocation. Guidelines for corridor one-stop shops, for pre-arranged train paths and reserve capacity were published and the framework for capacity allocation was adopted by all freight corridors. As regards pre-arranged paths and reserve capacity, these have substantially different levels of development and use across freight corridors. According to the available data, while the number of pre-arranged paths offered has been slightly increasing to meet market demand – also thanks to the new products developed to overcome the rigidity of this capacity tool (e.g., the flexible pre-arranged paths) – the take up of the reserve capacity is still far from the actual requirements of the market;
- the investment plans developed by the freight corridors show a low level of compliance in terms of their coverage of information that is required by the provisions of the Regulation, as they were found to vary a lot in terms of their structure and content (i.e., information on projects, funding and development of cost-benefit analyses);
- the coordination between the freight corridors has been implemented at two levels. First, through more general initiatives aimed at involving the broadest scope of the freight corridors community. Second, through initiatives carried out by the freight corridors themselves and aimed at addressing specific issues;
- the corridor information documents published by the freight corridors are in line with the provisions of the Regulation. In general, all technical information and parameters are provided. Some differences can be found regarding the format in which information is displayed and this may depend on the different approaches used by infrastructure managers to gather the information needed. The key sections of the corridor information document are Book 2 on the excerpts of the network statement on the timetabling for the respective year and Book 4 on the procedures for capacity and traffic management; and
- the freight corridors regularly publish information about the coordination of infrastructure works, which may have effects on temporary capacity restrictions. However, due to a misalignment between the planning and actual execution of the works by infrastructure managers, the information provided by the freight corridors is often incomplete or unreliable. Therefore, the railway undertakings and other applicants have to revert to the primary source of information provided by infrastructure managers to look for updated plans on the execution of works.

Baseline

In general, an evaluation exercise seeks to establish to what extent an intervention is responsible for the observed changes and to identify the cause-and-effect relationships between the intervention and the observed changes. To this end, a counterfactual situation in which the Regulation has not been adopted is generally developed.

Due to the complexity of this evaluation exercise, the baseline definition required a case-by-case approach. The data to develop the baseline have been gathered from desk research and field research and from the data made available by RailNetEurope. These allowed the identification of: (i) a group of key performance indicators to measure changes and (ii) the situations against which comparisons could be made.

Data availability has enabled an analysis to be undertaken, based on average commercial speed, as well as on the punctuality of the rail services allocated through

the freight corridor tools, and to compare this performance with the corresponding indicators valid for the rail services not directly influenced by the Regulation.

The estimated impact that can be inferred thanks to the difference in the commercial speed between trains running on pre-arranged paths and other paths is rather small and ranges between 0.1% for the Rhine-Alpine freight corridor and 3.3% for the Czech-Slovak/Rhine-Danube freight corridor.

Despite a lack of data, which does not allow for the identification of a consistent trend of the number of freight trains before and after the implementation of the Regulation, it can be assumed that the effect of the Regulation could be of the same order of magnitude for the other freight corridors.

Evaluation findings

The main findings are presented throughout the report by following the structure of the evaluation matrix in response to the five criteria of relevance, effectiveness, efficiency, coherence and EU added value.

Relevance

With respect to the relevance criterion, the evaluation study requires an understanding of whether and to what extent:

- the objectives of the Regulation are (still) relevant to address the current problems and needs of European freight transport and how they contribute to the goals of transport policy and to those of related policies (e.g., climate change and economic policy) (evaluation questions 1 and 2); and
- the areas of intervention, the measures and tools provided in the Regulation are appropriate to address the problems and needs of European rail freight transport and to reach the objectives of the Regulation (evaluation questions 3 and 4).

The relevance of the general objectives of the Regulation has not changed over time; they respond to the problems and needs (as identified in the intervention logic), which have not changed. This also holds true for specific objectives in their general formulation. However, as soon as the specific objectives are linked to the instruments for their achievement, i.e. the provisions of the Regulation, they have to be checked against their effectiveness. New developments outside of the scope of the Regulation, such as the growing network orientation of the governance boards and the involvement of users when preparing the boards' decisions, indicate that the specific objectives should be readjusted periodically. Furthermore, the specific objectives are not substantiated by concrete targets, which makes monitoring their progress difficult.

The Regulation provides tools for improving the competitiveness of railways and for contributing to the achievement of a common EU transport policy. However, this contribution is very limited compared with the ambitious targets of EU transport and climate policies (namely those set in the objectives of the 2011 White Paper and in the 2019 Green Deal). The evolution of market performance indicators (i.e., on punctuality, costs of transport, reliability, commercial speed, etc.) indeed shows that the improvement of competitiveness of the railways (identified as the main need in the intervention logic) has only been achieved to a very limited extent.

The objectives concerning the improvement of the coordination of infrastructure capacity allocation have been partially achieved. Coordination instruments have been developed by RailNetEurope together with instruments for information and monitoring. The Regulation includes provisions for strategic developments (i.e., investment, the

European Rail Traffic Management System and interoperability), for which, however, the established freight corridor institutions were not given competence.

Major external changes have occurred, and are still expected to occur, which could not have been anticipated when the provisions of the Regulation were developed. Some instruments have been modified to achieve a better coordination of rail capacity management such as, for instance, flexible train paths and those arranged at short notice. Other instruments such as the corridor one-stop shop or the reserve capacity have not been developed that much. Periodic information relating to the changes of market, technology logistic requirements and their consequences for the application and development of freight corridor instruments would be useful (e.g., periodical updating of the Handbook on the Regulation (2011)).

Effectiveness

The questions on effectiveness require an assessment as to whether and to what extent:

- the provisions of the Regulation have been implemented by Member States, infrastructure managers and regulatory bodies, as well as managers and owners of the terminals (evaluation question 5);
- the general, specific and operational objectives of the Regulation have been achieved (evaluation question 6);
- side effects have materialised, both positive and negative (evaluation question 7);
- external and internal factors and developments have contributed to the achievement of the objectives of the Regulation, both positively and negatively (evaluation question 7);
- the cooperation and coordination between the governance structure of the freight corridors and related institutions and structures have been effective (evaluation question 8);
- the tools provided by the Regulation (e.g., the corridor one-stop shops, the pre-arranged train paths, the framework for the allocation of the infrastructure capacity) have produced the intended effects (evaluation question 9);
- the Regulation overall contributed to increasing the quality of the infrastructure services offered to operators of international rail freight services and to the competitiveness of rail freight transport (evaluation question 10);
- the Regulation helped to improve coordination, increased the priority of rail freight traffic and simplified use of rail infrastructure (evaluation question 10).

While progress on the implementation has been assessed above, it is important to understand how far the objectives have been met and whether the intended effects have been achieved.

With respect to the general objectives of the Regulation, the improvement of coordination between infrastructure managers and other stakeholders can be regarded as the major outcome that has been achieved, while the objectives related to simplifying the use of infrastructure and strengthening the integration of rail freight multimodal transport have been met to a limited extent. The overall objective of giving sufficient priority to rail freight does not seem to have been achieved so far.

The overall limited effectiveness can be also analysed by looking at the effect of each tool provided by the Regulation. As a matter of fact, the main result has been an increased availability of information on the conditions for the use of infrastructure (i.e., through the corridor one-stop shops, the corridor information document and the publication of the temporary capacity restrictions). The other main tools have produced very limited effects (i.e., the pre-arranged train paths, the reserve capacity, the

coordination of infrastructure capacity with access to terminals and the involvement of applicants other than railway undertakings).

Procedures for coordinating traffic management have been effective in the case of international contingency management that is linked with the provisions on traffic management in the event of a disturbance.

The key side effect is the setting-up of a community to share knowledge, which has improved the exchange of best practices and experiences as well as enhancing the coordination and harmonisation of approaches.

On the other hand, the Regulation was not found to have any specific negative side effects other than some shortcomings such as a lack of clarity of roles, an increase in bureaucracy and consequently a lack of simplification.

The level of engagement established between institutions, structures and the freight corridors has been relatively small in recent years. Activities have been conducted mainly with the Commission and institutions acting within the boundaries of the railway sector. Few cases were found of activities that aim to build relationships with bodies and entities outside of the railway industry, either those concerned with other transport modes, or those active in completely different fields.

On the overall quality of infrastructure services offered to international rail freight operators, and with respect to the competitiveness of rail freight transport, the analysis suggests that no progress has been made so far.

Efficiency

The costs for establishing and operating the freight corridors derive from EU contributions and membership fees paid by infrastructure managers and allocation bodies. Between 2011 and 2016 the eligible costs for establishing the freight corridors amounted to some EUR 55 million, of which EUR 35 million were covered by EU contributions. In terms of the efficiency of the EU contributions, the figures indicate that the average EU contribution per million of offered path-km is EUR 33 thousand, while the contribution per million of requested path-km is EUR 105 thousand.

For the stakeholders, the data gathered from the field research reveal relatively low one-off costs in the majority of the cases. As far as ongoing costs are concerned, the figures vary by stakeholder group and depend, in terms of magnitude, on the resources allocated to the activities related to the freight corridors. According to the stakeholders nothing has changed in terms of the costs of organising and operating international rail freight services as a consequence of the adoption of the Regulation.

Costs of the day-to-day activities of the permanent management office of the freight corridors are reported as being between EUR 500 thousand and EUR 2 million. The main cost categories include staff, travel and other expenses. According to the opinions gathered from the field, the administrative burden related to the reporting activities of freight corridors is considered to be high and increases the workload of the permanent management offices quite substantially. As the reporting activity might hamper other more important tasks of these offices, some representatives of the freight corridors have called for a simplification of reporting activities.

The benefits resulting from the implementation of the Regulation are not quantifiable. As estimated using the defined evaluation baseline, the number of additional international freight trains due to a higher commercial speed of the pre-arranged paths compared to the other paths is relatively small. For the concerned stakeholder groups

most of the benefits stemming from the implementation of the Regulation are qualitative.

Coherence

The evaluation questions on coherence require the assessment of whether and to what extent Regulation is coherent with:

- the objectives of EU transport policy and the objectives of other policies, such as energy and climate change policy, economic, trade and digital policy and the Digital Single Market Strategy for Europe (evaluation question 13); and
- other relevant and transport related EU legislation in particular: the Single European Railway Area Directive 2012/34/EU; the TEN-T Guidelines (Regulation (EU) No 1315/2013) and the Connecting Europe Facility Regulation (EU) No 1316/2013; the Combined Transport Directive (Council Directive 92/106/EEC); the Railway Interoperability Directive (EU) 2016/797; and the technical specifications for interoperability, the legislative acts for which were included in the Fourth Railway Package, as far as relevant (evaluation question 15).

Furthermore, the evaluation questions require the assessment of:

- how the work of the freight corridors has been supported by the EU funding instruments and institutions (evaluation question 16); and
- how the Regulation interacts with other international and national/local legislation and initiatives, relevant for international rail freight transport (evaluation question 17).

The evaluation shows that the Regulation is compatible with the goals of the economic, climate and digital policy publications of the Commission. However, its influence on the general policy goals and targets is limited. This is particularly relevant when assessing the results against the targets of the 2011 Transport White Paper.

The Regulation is also widely compatible with EU regulations for the railway sector. Previously unclear allocations of responsibilities have been clarified in a more recent Directive (i.e., the fourth Railway Package). The only major differences can be identified with respect to Regulation 1315/2013 on the Union guidelines for the development of the trans-European transport. The competences of the freight corridor bodies for strategic issues like investment, European Rail Traffic Management System or interoperability are not clear and overlap with those of the core network corridors. This leads to tasks given to the freight corridors' boards for which they have no competence and implies a duplication of work.

The activity of the freight corridors has been supported by several grant agreements and funded through past Connecting Europe Facility calls.

Further to this, many financial instruments have been used to support the development of the rail sector and modal shift from road to rail. The initiatives started with the Marco Polo programme to support the development of intermodal transport with dedicated funding, although this has not been continued. The programme was later incorporated into the Connecting Europe Facility, which led to reduced funding for intermodal freight transport. Funding of rail research and development has improved thanks to the Horizon 2020 Framework Programme, in particular through the establishment of the Shift2Rail Joint Undertaking. However, nothing can be found explicitly referring to freight corridor development. Considering the overall funding of infrastructure development, the separation of funding by passenger and freight rail transport, or by freight corridors and other parts of the network, is not possible.

Member States have the competence for the national parts of investment planning. Despite the fact that EU Directives (e.g., on interoperability) have been transposed into national law, Member States are broadly independent with respect to decisions on investment projects. Their planning can effectively be influenced by EU co-finance. International railway connections to non-EU neighbours and Asian countries underline the importance of common rules for rail traffic management and support the objectives of the Regulation. The freight corridors provide a number of interconnection points for long-distance East-West transport. The rigorous Chinese policy of support for the railways can enhance European railway policy if the political relationships develop positively.

EU added value

The Regulation is embedded in a host of directives and regulations aimed at reorganising the European railway sector. It addresses the coordination and management of capacity allocation for defined rail freight corridors by establishing service institutions in the form of corridor one-stop shops and introducing standardised instruments for capacity allocation in the form of pre-arranged paths and reserve capacity with the aim of prioritising international rail freight transport. In this context, transnational organisations have been established on the corridor level, which bring together infrastructure managers and the rail transport divisions of national governments to solve the problems of management and governance of the corridors. This has stimulated European cooperation and the willingness to develop common solutions for problems facing border-crossing rail freight transport.

The development of a common European rail freight community is reflected in activities beyond the provisions of the Regulation, for instance in the establishment of working groups, the preparation of cross-corridor agreements and the network-wide activities of RailNetEurope for the development of guidelines, handbooks, performance indicators and IT tools. This is combined with a strong support of stakeholders from the market side, such as railway undertakings, terminal operators, forwarders and shippers, represented by their associations, and from the political side as demonstrated by the declarations of Rotterdam, Vienna and Leipzig. The creation of a common awareness amongst stakeholders that rail freight transport can only develop successfully if all of the involved parties cooperate actively can be regarded as the biggest EU added value achieved by the Regulation so far.

These positive reactions of the involved stakeholders are a necessary condition for achieving the overarching goal of making rail freight transport competitive and increasing its modal share. However, to be sufficient, the provisions of the Regulation should improve on the performance of operations for achieving productivity gains. Comparing performance indicators, such as average commercial speeds, punctuality and reliability on freight corridors over time, the progress that has been made is only small (for commercial speeds) or even non-existent (for punctuality). Comparing these indicators for routes including and excluding the freight corridors with routes outside of the freight corridors, the designated freight corridor lines do not emerge as the better alternatives. This raises the question as to whether the instruments provided by the Regulation are in fact facilitating management processes and meeting market needs.

The introduction of corridor one-stop shops follows an intuitive logic for facilitating the administrative processes for users, i.e. usually the railway undertakings. In practice, however, it can complicate administrative processes in case of rearrangements, which occur frequently. Pre-arranged paths and reserve capacity are defined as rigid instruments under European law, which force infrastructure managers to reserve capacities which might be left idle. As a result, some freight corridors have changed to offer more flexible pre-arranged path products. However, apart from certain exceptions,

infrastructure managers have little incentive to make extensive use of the freight corridor tools.

It follows that the EU added value of the provisions of the Regulation for capacity management is limited. A positive impact can be identified insofar as the application of the provisions resulted in the gathering of experience with dedicated service institutions and capacity management products for international rail freight transport. The experience gathered relating to the capacity management products of the Regulation provided the basis for developing more flexible and market-conforming instruments (e.g., in the course of the Timetable Redesign Project and the development of modern IT instruments at the network level).

The Regulation also addresses strategic issues of indicative investment planning and the deployment of interoperability. The provisions even include requirements for the use of cost-benefit analysis and financial planning. However, the freight corridor governance bodies have neither the resources for strategic planning – which in most cases includes rail passenger and freight transport – nor the competence for its implementation. While the strategic issues as such are most relevant, their integration into the Regulation has not addressed the needs of the relevant decision-making authorities.

RÉSUMÉ

Ce rapport présente les conclusions de l'étude de support à l'évaluation du Règlement n° 913/2010 du Parlement européen et du Conseil du 22 septembre 2010 concernant un réseau ferroviaire européen de fret compétitif (le « Règlement »). Le Règlement établit des règles de sélection, d'organisation, de gestion et de planification indicative des investissements dans les corridors fret.

L'étude examine la pertinence, l'efficacité, l'efficience, la cohérence et la valeur ajoutée européenne du Règlement. L'analyse est basée sur des données recueillies à partir d'un éventail de sources primaires et secondaires et sur les commentaires directs des parties prenantes concernées, recueillies à l'aide d'entretiens et d'enquêtes auprès des autorités nationales, de l'industrie ferroviaire et d'une consultation publique ouverte.

L'étude conclut que le Règlement a été mis en œuvre en ce qui concerne la désignation, la gouvernance, l'investissement et la gestion des corridors fret. De manière générale, les parties prenantes concernées ont respecté les dispositions dans un sens formel et dans leur champ d'application réel. Toutefois, en soi, le Règlement a eu un impact relativement limité dans la réalisation des objectifs généraux, spécifiques et opérationnels, et n'a pas conduit à une large adoption des outils, qui n'ont produit les effets escomptés que dans une mesure limitée.

RÉSUMÉ ANALYTIQUE

L'objet de l'étude de support à l'évaluation est de fournir une évaluation approfondie de l'impact du Règlement (EU) No 913/2010 sur le secteur du fret ferroviaire international. Les méthodes appliquées sont conformes aux lignes directrices de la Commission européenne pour "une meilleure réglementation[2]". L'étude comprend trois piliers principaux : une recherche documentaire approfondie de documents pertinents, un processus complet d'analyse des données, et une consultation des parties prenantes impliquées à différents niveaux dans le secteur.

Les dispositions du Règlement ont abouti à la publication d'une série de rapports. En particulier, chaque corridor fret a publié, à intervalles réguliers (mis à jour si nécessaire), des documents spécifiques, tels qu'un plan de mise en œuvre, un document d'information du corridor, ainsi que des rapports de mise en œuvre. En outre, chaque corridor a fourni un rapport sur une étude de marché transport, des rapports de suivi de performance et des enquêtes sur la satisfaction des usagers. Le rapport annuel de chaque corridor fret comprend notamment un résumé de toutes les activités effectuées annuellement. Du fait de l'existence de tels documents, il est possible de retracer les évolutions et comment ces-dernières sont survenues.

D'autre part, malgré la publication de ce nombre élevé de documents, l'hétérogénéité de l'information répertoriée à travers les rapports, ainsi que la faible disponibilité et qualité des données quantitatives, rendent difficile l'analyse et la comparaison de la performance des corridors fret. Afin de remédier à ce manque d'information, les données de RailNetEurope ont été utilisées, principalement extraites des deux systèmes informatiques servant à la gestion et à la surveillance du trafic international de fret ferroviaire, notamment le système de coordination de voie pour les indicateurs sur la capacité d'attribution de la capacité et le système d'information ferroviaire pour les données portant sur la performance opérationnelle des trains circulant sur les corridors.

Un élément clé de l'évaluation correspond aux activités de consultation associant les parties prenantes concernées, lesquelles ont été réalisées en utilisant différentes approches :

- soumission de questionnaires d'enquêtes ciblés ;
- entretiens ciblés dans le contexte des études de cas ; et
- une consultation publique ouverte menée par la Commission.

Cette stratégie de consultation a permis de prendre en compte l'opinion d'un nombre élevé de parties prenantes (plus de 130 réponses au questionnaire d'enquête et plus de 40 entretiens directs) et de comprendre leur point de vue reflétant des perspectives différentes.

Mise en œuvre du Règlement

L'analyse fournie indique que l'inclusion de corridors fret dans la législation européenne a conduit à des changements significatifs dans la communauté ferroviaire européenne. Les principaux succès peuvent être résumés comme suit :

- mise en œuvre complète des provisions du Règlement pour la création de corridors fret et d'organes de gouvernance; outre de telles exigences de base, un effort remarquable a été déployé pour coordonner différentes activités (par

[2] https://ec.europa.eu/info/sites/info/files/better-regulation-guidelines.pdf.

exemple, groupes de travail, réseau de conseils d'administration, cadre commun pour l'attribution des capacités, etc.). Cependant, il apparait que tous les groupes de parties prenantes concernées n'ont pas bénéficié du même degré de participation, ou n'ont pas été associés de la manière la plus efficace qui soit ;

- en ce qui concerne les documents requis pour développer les corridors fret (par exemple, les études de marché du transport et les plans de mise en œuvre), en dépit du fait que nombre de corridors ont satisfait aux dispositions initiales, les documents ont été mis à jour pour quelques corridors seulement. Par ailleurs, il convient de souligner que les études de marché transport n'ont pas de structure commune, ce qui rend difficile leur comparabilité en termes d'indicateurs et de résultats ;
- les corridors fret ont mis en œuvre les principaux outils d'allocation de la capacité. Des Lignes Directrices pour les guichets uniques des corridors pour les sillons ferroviaires préétablis et la capacité de réserve ont été publiées, et le cadre d'attribution de la capacité a été adopté par tous les corridors fret. En ce qui concerne les sillons préétablis et la capacité de réserve, ils présentent des niveaux de développement et d'utilisation sensiblement différents d'un corridor fret à l'autre. Selon les données disponibles, alors que le nombre de sillons préétablis offerts a légèrement augmenté pour répondre à la demande du marché – entre autres grâce aux nouveaux produits développés pour surmonter la rigidité de cet outil de capacité (par exemple, les sillons flexibles préétablis) – l'utilisation de la capacité de réserve est encore loin des exigences réelles du marché ;
- les plans d'investissement élaborés par les corridors fret montrent un faible niveau de conformité en ce qui concerne leur couverture de l'information requise par les dispositions du Règlement, car ils ont beaucoup varié en termes de structure et de contenu (c.-à-d. information sur les projets, financement et élaboration d'analyses coûts-avantages) ;
- la coordination entre les corridors fret a été mise en œuvre à deux niveaux. Premièrement, par le biais d'initiatives plus générales visant à impliquer la plus large portée de la communauté des corridors fret. Deuxièmement, par le biais d'initiatives menées par les corridors fret eux-mêmes et visant à résoudre des questions spécifiques ;
- les documents d'information sur les corridors publiés par les corridors fret sont conformes aux dispositions du Règlement. En général, toutes les informations techniques et les paramètres sont fournis. Certaines différences peuvent être trouvées quant au format dans lequel l'information est affichée, ce qui peut dépendre des différentes approches utilisées par les gestionnaires d'infrastructure pour recueillir l'information nécessaire. Les principales sections du document d'information du corridor sont le Livre 2 sur les extraits des relevés de réseau du calendrier de l'année respective et le Livre 4 sur les procédures de gestion de la capacité et du trafic ; et
- les corridors fret publient régulièrement de l'information sur la coordination des travaux d'infrastructure, ce qui peut avoir des effets sur les restrictions temporaires de capacité. Toutefois, en raison d'un décalage entre la planification et l'exécution réelle des travaux par les gestionnaires de l'infrastructure, l'information fournie par les corridors fret est souvent incomplète ou peu fiable. Par conséquent, les entreprises ferroviaires et les autres demandeurs doivent revenir à la principale source d'information fournie par les gestionnaires de l'infrastructure, afin de rechercher des plans mis à jour pour l'exécution des travaux.

Base de référence

En général, un exercice d'évaluation vise à déterminer dans quelle mesure une intervention est responsable des changements observés et à identifier les relations de

cause à effet entre l'intervention et les changements observés. À cette fin, une situation contrefactuelle dans laquelle le Règlement n'a pas été adopté est généralement développée.

En raison de la complexité de cet exercice d'évaluation, la définition de base a exigé une approche au cas par cas. Les données pour élaborer la base de référence ont été recueillies à partir de recherches documentaires, d'enquêtes de terrain et à partir des données mises à disposition par RailNetEurope. Ils ont permis d'identifier : (i) un groupe d'indicateurs de rendement clés pour mesurer les changements et (ii) les situations auxquelles des comparaisons peuvent être faites.

La disponibilité des données a permis d'obtenir une analyse fondée sur la vitesse commerciale moyenne ainsi que sur la ponctualité des services ferroviaires alloués par les outils du corridor fret, et de comparer ce rendement avec les indicateurs correspondants valables pour les services ferroviaires qui ne sont pas directement influencés par le Règlement.

L'impact estimé que l'on peut déduire de la différence de vitesse commerciale entre les trains circulant sur des sillons préétablis et d'autres sillons est plutôt faible et varie entre 0,1% pour le corridor fret Rhin-Alpes, et 3,3% pour le corridor fret tchèque-slovaque Rhin-Danube.

Malgré le manque de données, qui ne permet pas d'identifier une tendance constante du nombre de trains de marchandises avant et après la mise en œuvre du Règlement, on peut supposer que l'effet du Règlement pourrait être du même ordre de grandeur pour les autres corridors fret.

Résultats de l'évaluation

Les principales conclusions sont présentées tout au long du rapport en suivant la structure de la matrice d'évaluation selon les cinq critères de pertinence, d'efficacité, d'efficience, de cohérence et de valeur ajoutée de l'UE.

Pertinence

En ce qui concerne le critère de pertinence, l'étude d'évaluation exige de comprendre si et dans quelle mesure :

- les objectifs du Règlement sont (encore) pertinents pour répondre aux problèmes et aux besoins actuels du transport européen de marchandises et comment ils contribuent aux objectifs de la politique des transports et à celui des politiques connexes (par exemple, le changement climatique et la politique économique) (questions d'évaluation 1 et 2); et
- les domaines d'intervention, les mesures et les outils prévus dans le Règlement sont appropriés pour répondre aux problèmes et aux besoins du transport ferroviaire européen de marchandises et pour atteindre les objectifs du Règlement. (questions d'évaluation 3 et 4).

La pertinence des objectifs généraux du Règlement n'a pas changé au fil du temps ; ils répondent aux problèmes et aux besoins (tels qu'identifiés dans la logique d'intervention), qui n'ont pas changé. Cela vaut également pour des objectifs spécifiques dans leur formulation générale. Toutefois, dès que les objectifs spécifiques sont liés aux instruments de leur réalisation, c'est-à-dire les dispositions du Règlement, ils doivent être vérifiés par rapport à leur efficacité. De nouveaux développements en dehors du champ d'application du Règlement, tels que l'orientation croissante du réseau des conseils de gouvernance et la participation des utilisateurs à la préparation des décisions

des conseils, indiquent que les objectifs spécifiques devraient être réajustés périodiquement. En outre, les objectifs spécifiques ne sont pas étayés par des objectifs concrets, ce qui rend difficile le suivi de leurs réalisations.

Le Règlement fournit des outils pour améliorer la compétitivité des chemins de fer et contribuer à la réalisation d'une politique commune des transports de l'UE. Toutefois, cette contribution est très limitée par rapport aux objectifs ambitieux des politiques de l'UE en matière de transport et de climat (à savoir ceux fixés dans les objectifs du Livre Blanc de 2011 et dans le « Green Deal européen » de 2019). L'évolution des indicateurs de performance du marché (ponctualité, coûts de transport, fiabilité, vitesse commerciale, etc.) montre en effet que l'amélioration de la compétitivité des chemins de fer (identifiée comme le principal besoin de la logique d'intervention) n'a été réalisée que dans une mesure très limitée.

Les objectifs concernant l'amélioration de la coordination de l'allocation des capacités d'infrastructure ont été partiellement atteints. Des instruments de coordination ont été développés par RailNetEurope ainsi que par des instruments d'information et de suivi. Le Règlement comprend des dispositions relatives aux développements stratégiques (c'est-à-dire l'investissement, le système européen de gestion du trafic ferroviaire et l'interopérabilité), pour lesquelles les institutions établies de corridor fret n'ont toutefois pas reçu de compétence.

D'importants changements externes se sont produits et devraient encore se produire, ce qui n'a pas pu être anticipé lorsque les dispositions du Règlement ont été élaborées. Certains instruments ont été modifiés afin d'assurer une meilleure coordination de la gestion de la capacité ferroviaire, comme, par exemple, les sillons flexibles et ceux aménagés à court préavis. D'autres instruments, comme le guichet unique de corridor ou la capacité de réserve, n'ont pas beaucoup progressé. Des informations périodiques relatives à l'évolution du marché, aux exigences logistiques technologiques et à leurs conséquences sur l'application et le développement d'instruments de corridor fret, seraient utiles (p. ex., mise à jour périodique du Manuel sur le Règlement (2011)).

Efficacité

Les questions sur l'efficacité nécessitent de savoir si et dans quelle mesure :

- les dispositions du Règlement ont été mises en œuvre par les États membres, les gestionnaires d'infrastructure, les organismes de réglementation, ainsi que les gestionnaires et les propriétaires des terminaux (question d'évaluation 5) ;
- les objectifs généraux, spécifiques et opérationnels du Règlement ont été atteints (question d'évaluation 6) ;
- les effets secondaires se sont matérialisés, tant positifs que négatifs (question d'évaluation 7) ;
- les facteurs et développements externes et internes ont contribué à la réalisation des objectifs du Règlement, tant positivement que négativement (question d'évaluation 7) ;
- la coopération et la coordination entre la structure de gouvernance des corridors fret et les institutions et structures connexes ont été efficaces (question d'évaluation 8) ;
- les outils fournis par le Règlement (p. ex., les guichets uniques du corridor, les sillons ferroviaires préétablis, le cadre d'attribution de la capacité d'infrastructure) ont produit les effets escomptés (question d'évaluation 9) ;
- le Règlement dans son ensemble a contribué à accroître la qualité des services d'infrastructure offerts aux exploitants de services internationaux de fret ferroviaire et à la compétitivité du transport ferroviaire de marchandises (question d'évaluation 10) ;

- le Règlement a contribué à améliorer la coordination, à accroître la priorité du trafic ferroviaire de marchandises et à simplifier l'utilisation de l'infrastructure ferroviaire (question d'évaluation 10).

Bien que les progrès réalisés dans la mise en œuvre aient été évalués ci-dessus, il est important de comprendre dans quelle mesure les objectifs ont été atteints, et si les effets escomptés ont été atteints.

En ce qui concerne les objectifs généraux du Règlement, l'amélioration de la coordination entre les gestionnaires d'infrastructure et les autres parties prenantes peut être considérée comme le principal résultat atteint, tandis que les objectifs liés à la simplification de l'utilisation de l'infrastructure et au renforcement de l'intégration du transport multimodal de fret ferroviaire ont été atteints dans une mesure limitée. L'objectif global de donner suffisamment de priorité au fret ferroviaire ne semble pas avoir été atteint jusqu'à présent.

L'efficacité globale limitée peut également être analysée en examinant l'effet de chaque outil fourni par le Règlement. En fait, le principal résultat a été une disponibilité accrue de l'information sur les conditions d'utilisation de l'infrastructure (c.-à-d. par le corridor des guichets uniques, le document d'information sur le corridor et la publication des restrictions temporaires de capacité). Les autres outils principaux ont produit des effets très limités (c.-à-d. les sillons ferroviaires préétablis, la capacité de réserve, la coordination de la capacité d'infrastructure avec accès aux terminaux et la participation de demandeurs autres que les entreprises ferroviaires).

Les procédures de coordination de la gestion du trafic ont été efficaces dans le cas de la gestion internationale des urgences, qui est liée aux dispositions relatives à la gestion du trafic en cas de perturbation.

L'effet secondaire clé est la mise en place d'une communauté pour partager les connaissances, ce qui a amélioré l'échange de meilleures pratiques et expériences ainsi que le renforcement de la coordination et de l'harmonisation des approches.

D'autre part, le Règlement n'a pas eu d'effets secondaires négatifs spécifiques autres que certaines lacunes, telles qu'un manque de clarté des rôles, une augmentation de la bureaucratie et, par conséquent, un manque de simplification.

Le niveau d'engagement établi entre les institutions, les structures et les corridors fret a été relativement faible au cours des dernières années. Des activités ont été menées principalement auprès de la Commission et d'institutions agissant dans les limites du secteur ferroviaire. Peu de cas d'activités ont été enregistrés visant à établir des relations avec des organismes et des entités en dehors de l'industrie ferroviaire, que ce soit des organismes s'intéressant à d'autres modes de transport, ou d'autres qui sont actifs dans des domaines complètement différents.

En ce qui concerne la qualité globale des services d'infrastructure offerts aux opérateurs internationaux de fret ferroviaire et la compétitivité du transport ferroviaire de marchandises, l'analyse suggère qu'aucun progrès n'a été atteint jusqu'à présent.

Efficience

Les coûts d'établissement et d'exploitation des corridors fret proviennent des contributions de l'UE et des cotisations payées par les gestionnaires d'infrastructure et les organismes d'allocation concernés. Entre 2011 et 2016, les coûts éligibles à l'établissement des corridors fret se sont élevés à quelque 55 millions d'euros, dont 35 millions d'euros ont été couverts par les contributions de l'UE. En termes d'efficience

des contributions de l'UE, les chiffres indiquent que la contribution moyenne de l'UE par million de kilomètres parcourus offerts est de 33 000 euros, tandis que la contribution par million de sillon-km demandés est de 105 000 euros.

Pour les parties prenantes, les données recueillies dans le cadre de la recherche de terrain révèlent des coûts ponctuels relativement faibles dans la majorité des cas. En ce qui concerne les coûts récurrents, les chiffres varient selon les groupes de parties prenantes et dépendent en termes d'ampleur des ressources allouées aux activités liées aux corridors fret. Selon les parties prenantes, rien n'a changé en termes de coûts d'organisation et d'exploitation des services internationaux de fret ferroviaire, suite à l'adoption du Règlement.

Les coûts des activités quotidiennes de l'organisme de gestion permanent des corridors fret se situent entre 500 000 et 2 millions d'euros. Les principales catégories de coûts comprennent le personnel, les déplacements et d'autres dépenses. Selon les opinions recueillies sur le terrain, la complexité administrative liée aux activités de déclaration des corridors fret est considérée comme élevée et augmente considérablement la charge de travail des organismes de gestion permanents. Comme l'activité de déclaration pourrait entraver d'autres tâches plus importantes de l'organisme de gestion, certains représentants des corridors fret ont appelé à une simplification des activités de notification.

Les avantages découlant de la mise en œuvre du Règlement ne sont pas quantifiables. Comme on l'a estimé à l'aide de la base d'évaluation définie, le nombre de trains de marchandises internationaux supplémentaires en raison d'une vitesse commerciale plus élevée sur les sillons préétablis comparé aux autres sillons, est relativement faible. Pour les groupes de parties prenantes concernées, la plupart des avantages découlant de la mise en œuvre du Règlement est qualitative.

Cohérence

Les questions d'évaluation sur la cohérence nécessitent l'évaluation de la cohérence de la réglementation en lien avec les aspects suivants :

- les objectifs de la politique des transports de l'UE et les objectifs d'autres politiques, telles que la politique sur l'énergie et le changement climatique et la politique économique, commerciale et numérique et la stratégie du marché unique numérique pour l'Europe (question d'évaluation 13) ; et
- d'autres législations pertinentes et liées aux transports de l'UE en particulier : la Directive sur l'espace ferroviaire unique européen (2012/34/EU), les Lignes Directrices RTE-T (Règlement (EU) No 1315/2013) et le Règlement sur le mécanisme pour l'interconnexion en Europe (MIE) (Règlement (EU) No 1316/2013); la Directive sur le transport combiné (Directive du Conseil 92/106/CEE), la Directive sur l'interopérabilité ferroviaire (UE) 2016/797 et les spécifications techniques pour l'interopérabilité, les actes législatifs inclus dans le quatrième paquet ferroviaire, si pertinent (question d'évaluation 15).

De plus, les questions d'évaluation exigent l'évaluation de :

- comment le travail des corridors fret a été soutenu par les instruments et institutions de financement de l'UE (question d'évaluation 16) ; et
- comment le Règlement interagit avec d'autres législations et initiatives internationales et nationales/locales, pertinentes pour le transport international de marchandises ferroviaires (question d'évaluation 17).

L'évaluation montre que le Règlement est compatible avec les objectifs des publications de politique économique, climatique et numérique de la Commission. Toutefois, son influence sur les objectifs et les objectifs généraux de la politique est limitée. Cela est particulièrement pertinent lors de l'évaluation des résultats par rapport aux objectifs fixés dans le Livre Blanc de 2011.

Le Règlement est également largement compatible avec la réglementation de l'UE pour le secteur ferroviaire. L'attribution peu claire des responsabilités a été clarifiée dans une Directive plus récente (le quatrième paquet ferroviaire). Les seules différences majeures peuvent être identifiées en ce qui concerne le Règlement 1315/2013 sur les Lignes Directrices de l'Union pour le développement des réseaux de transport européen (RTE-T). Les compétences des organismes de gestion des corridors fret pour des questions stratégiques telles que l'investissement, le système européen de gestion du trafic ferroviaire ou l'interopérabilité ne sont pas claires et recoupent celles des corridors du réseau central RTE-T.

Cela conduit à l'attribution de tâches aux organismes de gestion des corridors fret, pour lesquelles ces organismes n'ont aucune compétence, et implique des doubles emplois.

L'activité des corridors fret a été soutenue par plusieurs conventions de subvention et financée par des appels passés par le mécanisme pour l'interconnexion en Europe (MIE).

En outre, de nombreux instruments financiers ont été utilisés pour soutenir le développement du secteur ferroviaire et le report modal de la route vers le rail. Les initiatives ont été lancées avec le programme Marco Polo pour soutenir le développement du transport intermodal avec un financement dédié, bien que celles-ci n'aient pas été poursuivies. Le programme a ensuite été intégré au mécanisme pour l'interconnexion en Europe (MIE), entrainant une réduction du financement du transport intermodal de marchandises. Le financement de la recherche et du développement ferroviaires s'est amélioré grâce au Programme-Cadre Horizon 2020, notamment grâce à la création de l'entreprise commune Shift2Rail. Toutefois, aucune mention sur l'aménagement des corridors fret ne peut être y trouvée explicitement. En ce qui concerne le financement global du développement de l'infrastructure, il n'est pas possible de séparer le financement par le transport ferroviaire de voyageurs et de marchandises, du financement par les corridors fret et d'autres parties du réseau.

Les États membres ont la compétence pour les parties nationales de la planification des investissements. Bien que les Directives de l'UE (par exemple, sur l'interopérabilité) aient été transposées dans le droit national, les États membres sont largement indépendants en ce qui concerne les décisions concernant les projets d'investissement. Leur planification peut effectivement être influencée par le co-financement de l'UE. Les liaisons ferroviaires internationales avec des pays non membres de l'UE et des pays asiatiques soulignent l'importance de règles communes pour la gestion du trafic ferroviaire et soutiennent les objectifs du Règlement. Les corridors fret fournissent un certain nombre de points d'interconnexion pour le transport longue distance Est-Ouest. La politique chinoise rigoureuse de soutien aux chemins de fer peut renforcer la politique ferroviaire européenne si les relations politiques se développent positivement.

Valeur ajoutée de l'UE

Le Règlement s'inscrit dans une multitude de Directives et de réglementations visant à réorganiser le secteur ferroviaire européen. Il traite de la coordination et de la gestion de l'allocation des capacités pour les corridors définis de fret ferroviaire, en établissant des institutions de service sous forme de guichets uniques pour les corridors, et en introduisant des instruments standardisés d'allocation des capacités sous forme de sillons préétablis et de capacité de réserve, dans le but de donner la priorité au transport

ferroviaire international de marchandises. Dans ce contexte, des organisations transnationales ont été créées au niveau des corridors, qui réunissent les gestionnaires d'infrastructures et les divisions du transport ferroviaire de gouvernements nationaux pour résoudre les problèmes de gestion et de gouvernance des corridors. Cela a stimulé la coopération européenne et la volonté de développer des solutions communes aux problèmes auxquels est confronté le transport de fret ferroviaire transfrontalier.

Le développement d'une communauté européenne commune du fret ferroviaire se reflète dans des activités qui vont au-delà des dispositions du Règlement, par exemple dans la création de groupes de travail, la préparation d'accords inter-corridors et les activités à l'échelle du réseau de RailNetEurope pour l'élaboration de Lignes Directrices, de manuels, d'indicateurs de performance et d'outils informatiques. Ceci est combiné avec un soutien important des parties prenantes du marché, telles que les entreprises ferroviaires, les exploitants de terminaux, les transitaires et les expéditeurs de marchandises, représentés par leurs associations, et du côté politique, comme en témoignent les déclarations de Rotterdam, Vienne et Leipzig. La création d'une prise de conscience commune des parties prenantes que le transport ferroviaire de marchandises ne peut se développer avec succès que si toutes les parties concernées coopèrent activement, peut être considéré comme la plus grande valeur ajoutée de l'UE obtenue par le Règlement à ce jour.

Ces réactions positives des parties prenantes concernées sont une condition nécessaire pour atteindre l'objectif global de rendre le transport ferroviaire de marchandises compétitif et d'accroître sa part modale. Néanmoins, pour être suffisantes, les dispositions du Règlement devraient améliorer le rendement des opérations pour réaliser des gains de productivité. Si l'on compare les indicateurs de performance, tels que la vitesse commerciale moyenne, la ponctualité et la fiabilité dans les corridors de fret au fil du temps, les progrès réalisés ne sont que faibles (pour les vitesses commerciales) ou même inexistants (pour la ponctualité). Si l'on compare ces indicateurs pour les itinéraires, en incluant et excluant les corridors fret, avec les itinéraires en dehors des corridors fret, les lignes désignées de corridor fret n'apparaissent pas comme étant les meilleures options. Cela soulève la question de savoir si les instruments fournis par le Règlement facilitent de manière effective les processus de gestion et répondent aux besoins du marché.

L'introduction de guichets uniques pour les corridors s'inscrit dans une logique intuitive de facilitation des processus administratifs pour les usagers, c'est-à-dire généralement les entreprises ferroviaires. Dans la pratique, cependant, elle peut compliquer les processus administratifs en cas de réorganisation, ce qui est fréquemment le cas. Les sillons préétablis et la capacité de réserve sont définis comme des instruments rigides dans le droit européen, ce qui oblige les gestionnaires d'infrastructures à réserver des capacités qui pourraient rester inactives. Par conséquent, certains corridors fret se sont transformés en produits de sillons préétablis plus flexibles. Mais à part certaines exemptions, les gestionnaires d'infrastructure sont peu incités à utiliser largement les outils du corridor fret.

Il s'ensuit que la valeur ajoutée par l'UE des dispositions du Règlement sur la gestion des capacités est limitée. Un impact positif peut être identifié dans la mesure où l'application des dispositions a permis de recueillir de l'expérience auprès d'institutions de services dédiées et de produits de gestion des capacités pour le transport ferroviaire international de marchandises. L'expérience recueillie en termes de produits de gestion des capacités du Règlement a servi de base à la plateforme de développement d'instruments plus souples et conformes au marché (par exemple, dans le cadre du projet Timetable Redesign et du développement d'instruments informatiques modernes au niveau du réseau).

Le Règlement aborde également les questions stratégiques de planification indicative des investissements et de déploiement de l'interopérabilité. Les dispositions comprennent même des exigences en matière d'analyse coûts-avantages et de planification financière. Toutefois, les organes de gouvernance des corridors fret n'ont ni les ressources nécessaires à la planification stratégique – qui comprend dans la plupart des cas le transport ferroviaire de passagers et de marchandises – ni la compétence nécessaire à la mise en œuvre. Bien que les questions stratégiques en tant que telles soient les plus pertinentes, leur intégration au Règlement n'a pas abordé les autorités décisionnelles compétentes.

ZUSAMMENFASSUNG

Dieser Bericht liefert die Ergebnisse der Bewertungsstudie zur Verordnung (EU) Nr. 913/2010 des Europäischen Parlaments und des Rates vom 22. September 2010 zum europäischen Eisenbahnnetz für wettbewerbsfähige Bahngütertransporte („Verordnung"). Die Verordnung stellt Regeln für die Auswahl und Organisation, das Management und die indikative Investitionsplanung für Frachtkorridore auf.

Die Studie untersucht Relevanz, Effektivität, Effizienz, Kohärenz und EU Mehrwert der Verordnung. Die Analyse basiert auf Daten, die aus einer Reihe von Primär- und Sekundärquellen stammen und durch direkte Informationen betroffener Gruppen ergänzt wurden, die aus Interviews und Befragungen nationaler Behörden, der Eisenbahnindustrie und einer öffentlichen Umfrage resultieren.

Die Studie kommt zu dem Ergebnis, dass die Verordnung umgesetzt wurde, soweit sie die Festlegung, Leitung, Investitionsplanung und das Management der Frachtkorridore betreffen. Im Allgemeinen haben die zuständigen Organisationen die Bestimmungen im formalen Sinn und Umfang erfüllt. Inhaltlich hat die Verordnung jedoch nur relativ geringe Auswirkung auf die allgemeinen, speziellen und operationalen Ziele gehabt und nicht zu einer breiten Anwendung der Instrumente geführt, so dass die angestrebten Wirkungen nur in begrenztem Umfang erzielt wurden.

ZUSAMMENFASSUNG DER ERGEBNISSE

Ziel dieser Studie zur Unterstützung der Evaluierung ist eine umfassende Bewertung der Auswirkungen von Verordnung (EU) Nr. 913/2010 auf den internationalen Schienengütersektor. Die angewandten Methoden entsprechen den Leitlinien für eine bessere Rechtsetzung der Europäischen Kommission. Die Studie basiert auf drei Hauptsäulen: ausführliche Schreibtischrecherche, eingehende Datenanalyse und Befragungen der auf verschiedenen Ebenen am Sektor Beteiligten.

Die Bestimmungen der Verordnung haben zur Veröffentlichung einiger Berichte geführt. Insbesondere hat jeder Güterverkehrskorridor in regelmäßigen Abständen (ggf. aktualisierte) spezifische Dokumente herausgegeben, wie z. B. den Durchführungsplan, das Korridorinformationsdokument und die Durchführungsberichte. Zusätzlich hat jeder Korridor eine Transportmarktstudie sowie Berichte zur Leistungsüberwachung und zu Umfrageergebnissen für die Nutzerzufriedenheit erstellt. Nicht zuletzt enthält der Jahresbericht jedes Korridors eine Zusammenfassung aller ausgeführten Tätigkeiten. Dank der Verfügbarkeit solcher Dokumente kann nachvollzogen werden, welche Entwicklungen stattgefunden haben.

Trotz dieser großen Anzahl an Dokumenten ist die Leistung der verschiedenen Korridore schwer zu analysieren und zu vergleichen, weil die Daten der verschiedenen Berichte heterogen und die Verfügbarkeit sowie die Qualität der quantitativen Daten niedrig sind. Aufgrund dieses Datenmangels wurden Daten von RailNetEurope verwendet, welche größtenteils aus den IT-Systemen extrahiert wurden, welche für das Management und die Überwachung des internationalen Güterverkehrs genutzt werden: das Trassenkoordinationssystem lieferte Hinweise bezüglich der Kapazitätszuweisung und das Zuginformationssystem lieferte Daten bezüglich der betrieblichen Leistung der entlang der im Korridor verkehrenden Züge.

Ein Schlüsselelement der Bewertung sind die Informationserhebungen unter Beteiligung betroffener Gruppen, die mit unterschiedlichen Ansätzen durchgeführt wurden:

- gezielte Erhebungen mit Hilfe von Umfragebögen;
- Interviews im Rahmen von Fallstudien;
- Befragung von Gruppen der Öffentlichkeit durch die Kommission.

Diese Erhebungsstrategie ermöglichte die Erkundung der Meinungen für eine große Zahl betroffener Gruppen (d.h. über 130 ausgefüllte Fragebögen und über 40 direkte Interviews) und das Verständnis ihrer Ansichten aus unterschiedlichen Perspektiven.

Umsetzung der Verordnung

Die durchgeführte Analyse deutet darauf hin, dass die Einrichtung der Güterverkehrskorridore in der Gesetzgebung der EU zu signifikanten Veränderungen in der Europäischen Eisenbahn-Landschaft geführt hat. Die wichtigsten Errungenschaften können wie folgt zusammengefasst werden:

- Die gesetzlichen Bestimmungen zur Einrichtung von Güterverkehrskorridoren und den erforderlichen Institutionen wurden vollständig umgesetzt; neben der Erfüllung solcher grundsätzlichen Anforderungen sind auch bemerkenswerte Anstrengungen zur Koordinierung unterschiedlicher Aktivitäten zu verzeichnen (wie zum Beispiel durch die Einrichtung von Arbeitsgruppen, das Netzwerk der Verwaltungsräte (Executive Boards), den gemeinsamen Rahmen für die Kapazitätszuweisung, etc.). Allerdings wurden nicht alle relevanten Gruppen gleichermaßen oder mit gleicher Effektivität einbezogen.

- Bei den für die Entwicklung der Güterverkehrskorridore erforderlichen Dokumenten (d. h.: Transportmarktstudien und Durchführungspläne) haben zwar viele Korridore die bei Einführung geltenden Bestimmungen erfüllt, jedoch wurden sie nur von wenigen Korridoren auch aktualisiert. Des Weiteren haben die Transportmarktstudien keine einheitliche Struktur, was sie hinsichtlich Indikatoren und Ergebnissen nur eingeschränkt vergleichbar macht.
- Die Güterverkehrskorridore haben die wichtigsten Instrumente zur Kapazitätszuweisung umgesetzt. Leitlinien für One-Stop Shops für vorab vereinbarte Zugtrassen und Reservekapazitäten wurden veröffentlicht und der Rahmen für Kapazitätszuweisungen wurde von allen Güterverkehrskorridoren übernommen. Vorab vereinbarte Zugtrassen und Reservekapazitäten weisen auf den verschiedenen Korridoren unterschiedliche Entwicklungsstadien und Nutzungsgrade auf. Den verfügbaren Daten zufolge liegt die Inanspruchnahme der Reservekapazität weit unterhalb der tatsächlichen Marktanforderungen, während die Anzahl vorab vereinbarter Zugtrassen leicht anstieg und sich der Nachfrage annäherte – unter anderem dank neuer Produkte, welche zur Überwindung der Inflexibilität dieses Kapazitätsinstruments entwickelt wurden (z. B. flexible vorab vereinbarte Trassen).
- Die von den Güterverkehrskorridoren entwickelten Investitionspläne erfüllen bezüglich der erforderlichen Informationen nur eingeschränkt die Bestimmungen der Verordnung, da sie hinsichtlich ihrer Struktur und Inhalt stark variieren (d.h. Informationen zu Projekten und deren Finanzierung sowie Erstellung von Kosten-Nutzen-Analysen).
- Die Koordinierung zwischen den Korridoren wurde auf zwei Ebenen umgesetzt. Erstens durch allgemeine Initiativen unter Einbeziehung möglichst aller Güterverkehrskorridore. Zweitens durch Eigeninitiativen einzelner Güterverkehrskorridore zur Bearbeitung spezifischer Aufgaben.
- Die Korridorinformationsdokumente der Güterverkehrskorridore entsprechenden Bestimmungen der Verordnung. Im Allgemeinen werden alle technischen Informationen und Parameter aufgeführt. Einige Unterschiede bestehen hinsichtlich des Darstellungsformats der Informationen, was auf die unterschiedlichen Erhebungsansätze der Infrastrukturmanager zurückgeführt werden kann. Die Schlüsselabschnitte der Korridorinformationsdokumente sind im Buch 2 über die Abschnitte zur Trassenplanung des entsprechenden Jahres und Buch 4 über die Prozeduren zum Kapazitäts- und Verkehrsmanagement zu finden.
- Die Güterverkehrskorridore veröffentlichen regelmäßig Informationen über die Koordination von Arbeiten an der Infrastruktur, die temporäre Kapazitätsbeeinträchtigungen zur Folge haben können. Diese Informationen sind jedoch häufig unvollständig oder ungenau, weil Planung und Ausführung der Arbeiten durch die Infrastrukturmanager nicht übereinstimmen. Deswegen müssen Eisenbahnunternehmen und andere Bewerber auf die von den Infrastrukturmanagern bereitgestellten Informationen als primäre Quelle zurückgreifen, um sich über aktualisierte Pläne zu Infrastrukturarbeiten zu informieren.

Ausgangslage

Grundsätzlich soll eine Bewertung einschätzen, in welchem Maße die betrachtete Intervention für beobachtete Veränderungen verantwortlich ist, und Ursache – Wirkung – Beziehungen zwischen Intervention und beobachteten Veränderungen aufzeigen. Dazu wird in der Regel eine kontrafaktische Konstellation unter der Annahme entwickelt, dass die Verordnung nicht erlassen worden wäre.

Aufgrund der Komplexität dieser Bewertung hat die Definition der Ausgangslage ein fallweises Vorgehen erfordert. Die für die Entwicklung der Ausgangslage erforderlichen

Daten wurden mit Hilfe von Schreibtischrecherchen und Feldforschung gesammelt sowie von RailNetEurope zur Verfügung gestellt. Sie ermöglichten die Identifizierung von: (1) einer Reihe von zentralen Leistungsindikatoren zur Messung von Veränderungen und (2) Situationen, die zu Vergleichszwecken herangezogen werden können.

Die Verfügbarkeit dieser Daten ermöglichte die Durchführung von Analysen auf Basis der durchschnittlichen Betriebsgeschwindigkeit und der Pünktlichkeit für Schienenverkehrsleistungen, die durch die Korridorinstrumente zugewiesen wurden. Weiter war es möglich, diese Leistungsergebnisse mit den entsprechenden Indikatoren für die nicht direkt von der Verordnung beeinflussten Leistungen zu vergleichen.

Der ermittelte Einfluss, der sich aus den unterschiedlichen Betriebsgeschwindigkeiten auf vorgehaltenen Korridor- und anderen Trassen ableiten lässt, war recht klein und lag zwischen 0.1 % auf dem Rhein-Alpen Frachtkorridor und 3.3 % auf dem Tschechsch-Slowakischen / Rhein-Donau Frachtkorridor.

Trotz des Datenmangels, aufgrund dessen kein konsistenter Trend für die Güterzugzahlen vor und nach der Implementierung der Verordnung identifiziert werden konnte, kann angenommen werden, dass der Effekt der Verordnung für die anderen Frachtkorridore in der gleichen geringen Größenordnung liegen könnte.

Bewertungsergebnisse

Die zentralen Ergebnisse werden im Bericht den fünf Kriterien Relevanz, Effektivität, Effizienz, Kohärenz und EU-Mehrwert in Form einer Bewertungsmatrix gegenüber gestellt.

Relevanz

Beim Relevanzkriterium erforderte die Studie eine Prüfung ob und in welchem Umfang:

- die Ziele der Verordnung (noch) relevant sind, um die aktuellen Probleme und Aufgaben des europäischen Güterverkehrs zu adressieren und wie sie zu den Zielen der Verkehrspolitik und damit verwandten Politikbereichen beitragen (z. B. Klimawandel und Wirtschaftspolitik) (Bewertungsfragen 1 und 2); und
- die von der Verordnung vorgesehenen Interventionsbereiche, Maßnahmen und Instrumente geeignet sind, um die Probleme und Aufgaben im europäischen Schienengüterverkehr zu adressieren und die Ziele der Verordnung zu erreichen (Bewertungsfragen 3 und 4).

Die Relevanz der allgemeinen Ziele der Verordnung hat sich mit der Zeit nicht verändert; sie sprechen allgemeine Probleme und Aufgaben an (wie in der Interventionslogik identifiziert), die unverändert vorliegen. Dies betrifft auch die spezifischen Ziele in ihrer allgemeinen Formulierung. Sobald die spezifischen Ziele jedoch mit den Instrumenten zu ihrer Erfüllung verknüpft werden, d.h. also mit den Durchführungsbestimmungen der Verordnung, sind sie auf ihre Wirksamkeit hin zu prüfen. Neue Entwicklungen außerhalb des Geltungsbereichs der Verordnung, wie die wachsende Netzwerkorientierung der Leitungsgremien und die Einbindung der Nutzerseite in die Vorbereitung von Gremienentscheidungen, deuten darauf hin, dass die spezifischen Zielsetzungen regelmäßig angepasst werden sollten. Des Weiteren werden die spezifischen Zielsetzungen nicht mit Hilfe von Zieleckwerten konkretisiert, so dass ihre Erfüllung schwer zu überwachen ist.

Die Verordnung stellt Instrumente bereit, die zur Verbesserung der Wettbewerbsfähigkeit des Schienenverkehrs und damit zur gemeinsamen EU Verkehrspolitik beitragen. Dieser Beitrag ist jedoch bescheiden im Vergleich zu den

ambitionierten Zielen der EU Verkehrs- und Klimapolitik (namentlich jenen der Zielsetzung des Weißbuchs (2011) und des Green Deals (2019)). Die Entwicklung von Indikatoren der Marktleistung (d.h.: Pünktlichkeit, Transportkosten, Verlässlichkeit, Betriebsgeschwindigkeit etc.) macht evident, dass eine Verbesserung der Wettbewerbsfähigkeit des Schienenverkehrs (die in der Interventionslogik als wichtigste Aufgabe identifiziert wurde) nur in sehr beschränktem Umfang erreicht wurde.

Die Zielsetzungen zur Verbesserung der Koordinierung für die Zuweisung von Infrastrukturkapazitäten wurden teilweise erreicht. RailNetEurope hat hierzu Koordinierungsinstrumente zusammen mit Informations- und Überwachungsinstrumenten entwickelt. Dagegen enthält die Verordnung Bestimmungen für strategische Aufgaben (d.h.: Investition, Interoperabilität und Europäisches Managementsystem für Schienenverkehr), wofür die für die Güterverkehrskorridore eingerichteten Institutionen keine Kompetenz haben.

Wichtige externe Veränderungen haben stattgefunden und sind auch künftig zu erwarten, was bei der Entwicklung der Bestimmungen der Verordnung nicht vorhersehbar war. Einige Instrumente wurden in der Anwendung angepasst, um die Koordinierung des Managements der Schienenkapazität zu verbessern, wie beispielsweise flexible oder kurzfristig arrangierbare Zugtrassen. Andere Instrumente wie der Korridor One-Stop Shop oder die Reservekapazität haben keine großen Fortschritte erzielt. Regelmäßige Informationen über Veränderungen des Marktes oder über Anforderungen der Logistiktechnik und eine entsprechende Anpassung von Korridorinformationen wären nützlich (z. B.: regelmäßige Aktualisierung des Handbuchs der Verordnung (2011)).

Effektivität

Die Bewertungsfragen zur Effektivität erfordern eine Einschätzung ob und inwiefern:

- die Bestimmungen der Verordnung von den Mitgliedstaaten, Infrastrukturmanagern, Regulierungsbehörden sowie Managern und Besitzern von Terminals umgesetzt wurden (Bewertungsfrage 5);
- die allgemeinen, spezifischen und betrieblichen Zielsetzungen der Verordnung erreicht wurden (Bewertungsfrage 6);
- Nebeneffekte sowohl positiver als auch negativer Art auftraten (Bewertungsfrage 7);
- externe und interne Faktoren und Entwicklungen das Erreichen der Zielsetzungen der Verordnung in positiver oder negativer Weise beeinflusst haben (Bewertungsfrage 7);
- die Kooperation und Koordination zwischen den Leitungsorganisationen für die Frachtkorridore und den verwandten Institutionen und Strukturen effektiv waren (Bewertungsfrage 8);
- die von der Verordnung bereitgestellten Instrumente (z. B. der Korridor One-Stop Shop, die vorab vereinbarten Zugtrassen, der Rahmen für die Zuweisung der Infrastrukturkapazität) die beabsichtigten Effekte erzielt haben (Bewertungsfrage 9);
- die Verordnung insgesamt zur Verbesserung der Qualität der den Betreibern internationaler Schienengütertransporte angebotenen Infrastrukturdienste und der Wettbewerbsfähigkeit des Schienengüterverkehrs beigetragen hat (Bewertungsfrage 10);
- die Verordnung dazu beigetragen hat, die Koordination zu verbessern, die Priorität des Schienengüterverkehrs zu erhöhen und die Nutzung der Schieneninfrastruktur zu vereinfachten (Bewertungsfrage 10).

Bei der Bewertung der Umsetzungsfortschritte, ist es wichtig zu verstehen, inwiefern die Zielsetzungen erreicht und die beabsichtigten Effekte erzielt wurden. Bezüglich der allgemeinen Zielsetzungen der Verordnung kann die verbesserte Koordination unter Infrastrukturmanagern und anderen betroffenen Gruppen als wichtigstes erreichtes Ergebnis betrachtet werden. Die Zielsetzungen zur Vereinfachung der Infrastrukturnutzung und zur Stärkung der Integration des multimodalen Schienengütertransports wurden indessen nur eingeschränkt erreicht. Die allgemeine Zielsetzung, dem Schienengüterverkehr ausreichend Priorität einzuräumen, wurde offensichtlich bislang nicht erreicht.

Die eingeschränkte Effektivität kann auch durch eine Betrachtung der Effekte der einzelnen von der Verordnung bereitgestellten Instrumente analysiert werden. Tatsächlich ist das wichtigste Resultat eine erhöhte Verfügbarkeit von Informationen über die Bedingungen der Infrastrukturnutzung (d.h. durch die Korridor One-Stop Shops, das Korridor Informationsdokument und die Veröffentlichung der temporären Kapazitätseinschränkungen). Die anderen Hauptinstrumente zeigen nur beschränkte Wirkung (d.h. die vorab vereinbarten Zugtrassen, die Reservekapazität, die Koordination der Infrastrukturkapazität mit Zugang zu Terminals und die Einbeziehung von weiteren Trassennachfragern über die Eisenbahnverkehrsunternehmen hinaus).

Prozeduren zur Koordinierung des Verkehrsmanagements waren besonders effektiv im Fall des internationalen Störfallmanagements, das durch Verordnungsvorschriften zur Bewältigung von Störfällen unterstützt wird.

Der wichtigste Nebeneffekt in der Formierung einer Wissensgemeinschaft zu sehen, die den Austausch von Methoden und Erfahrungen sowie die Koordination und Harmonisierung von Verfahrensweisen verbessert hat.

Auf der anderen Seite wurden keine besonders negative Nebeneffekte der Verordnung gefunden, abgesehen von Effekten aus dem Mangel an Klarheit hinsichtlich der Rollen von Gremien, aus zusätzlicher Bürokratie und dem daraus folgenden Mangel an Vereinfachung.

Die Intensität der Beziehungen zwischen externen Institutionen bzw. Strukturen und den Frachtkorridoren war in den vergangenen Jahren relativ gering. Die Aktivitäten wurden hauptsächlich im Zusammenwirken der Kommission und mit den Institutionen innerhalb des Schienensektors durchgeführt. Nur in wenigen Fällen zielten Tätigkeiten darauf ab, Beziehungen zu Organisationen jenseits des Schienenverkehrs aufzubauen, wie etwa zu anderen Verkehrsmitteln oder Wirtschaftsbereichen.

Die Analyse im Rahmen dieser Studie konnte keine Fortschritte bei der Qualität von Infrastrukturdiensten für die Betreiber des internationalen Schienengüterverkehrs und bei den Auswirkungen auf dessen Wettbewerbsfähigkeit feststellen.

Effizienz

Die Kosten für die Einrichtung und den Betrieb der Frachtkorridore leiten sich aus EU-Beiträgen und Mitgliedsbeiträgen ab, welche die Infrastrukturmanager und die zuständigen Behörden bezahlen. Zwischen 2011 und 2016 beliefen sich die betreffenden Kosten der Einrichtung der Frachtkorridore auf 55 Millionen EUR, wovon 35 Millionen EUR von EU-Zuschüssen gedeckt wurden. Die Zahlen zu den für die Beurteilung der Effizienz wichtigen EU-Zuschüssen deuten darauf hin, dass der durchschnittliche EU-Zuschuss pro Million angebotener Trassenkilometer sich auf 33.000 EUR beläuft, während der Beitrag pro Million nachgefragter Trassenkilometer bei 105.000 EUR liegt.

Die im Rahmen der Feldstudie erhobenen Daten weisen für die betroffenen Organisationen und Gruppen in den meisten Fällen relativ niedrige einmalige Kosten auf. Hinsichtlich Folgekosten variieren die Zahlen je nach Gruppe und ihre Höhe hängt von den Ressourcen ab, welche die Korridore betreffenden Tätigkeiten zugewiesen wurden. Nach Auskunft betroffener Gruppen haben sich deren Kosten für Organisation und Betrieb internationaler Schienengüterverkehrsdienste infolge der Verordnung nicht verändert.

Die Kosten der permanenten Tätigkeiten der Managementbüros für die Frachtkorridore wurden auf 500.000 bis zwei Millionen EUR beziffert. Die wichtigsten Kostenkategorien enthalten Personal, Reisen und andere Kosten. Den im Rahmen einer Befragung gesammelten Meinungen zufolge wird die administrative Last in Verbindung mit der Berichterstattung der Frachtkorridore als hoch betrachtet und erhöht die Arbeitslast der ständigen Managementbüros durchaus substanziell. Da die Berichterstattung wichtigere Tätigkeiten der Büros beeinträchtigen könnte, forderten einige Repräsentanten der Frachtkorridore eine Vereinfachung der Berichterstattung.

Die Vorteile aus der Umsetzung der Verordnung sind nicht quantifizierbar. Anhand der definierten Ausgangslage wurde geschätzt, dass die Zunahme internationaler Güterzugverkehre aufgrund nur leicht erhöhter Betriebsgeschwindigkeiten auf den vorgehaltenen im Vergleich zu anderen Trassen relativ gering ist. Den Meinungen betroffener Gruppen zufolge ist der überwiegende aus der Verordnung herrührende Nutzen qualitativer Art.

Kohärenz

Die Bewertungsfragen im Bereich der Kohärenz erfordern eine Einschätzung ob und in welchem Maße die Verordnung übereinstimmt mit:

- den Zielsetzungen der EU Verkehrspolitik und anderer Politikbereiche, wie der Energie- und Klimapolitik sowie der Wirtschafts-, Handels- und Digitalpolitik einschließlich der Strategie für einen europäischen digitalen Binnenmarkt (Bewertungsfrage 13); und
- anderer relevanter und den Verkehr betreffender EU-Gesetzgebung, insbesondere: die Richtlinie zur Schaffung eines einheitlichen europäischen Eisenbahnraums 2012/34/EU, die TEN-T Richtlinien (Verordnung (EU) Nr. 1315/2013) und die Verordnung zur Schaffung der „Connecting Europe" Fazilität (EU) Nr. 1316/2013; die Richtlinie über kombinierten Güterverkehr (Ratsrichtlinie 92/106/EWG), die Richtlinie über die Interoperabilität des Eisenbahnsystems (EU) 2016/797 und die technischen Spezifikationen für Interoperabilität, die Rechtsakte des Vierten Eisenbahnpakets, sofern relevant (Bewertungsfrage 15).

Des Weiteren erfordern die Bewertungsfragen eine Einschätzung:

- wie die Arbeit der Frachtkorridore durch die EU Finanzierungsinstrumente und -institutionen unterstützt wurde (Bewertungsfrage 16); und
- wie die Verordnung mit anderen internationalen und nationalen/lokalen für den internationalen Schienengüterverkehr relevanten Gesetzgebungen und Initiativen interagiert (Bewertungsfrage 17).

Die Bewertung zeigt, dass die Verordnung mit den veröffentlichten Zielen der Kommission zur Wirtschafts-, Klima und Digitalisierungspolitik kompatibel sind. Allerdings ist ihr Einfluss auf die allgemeinen politischen Ziele beschränkt. Das ist besonders relevant für die Einschätzung der Ergebnisse hinsichtlich der Ziele des Weißbuchs zur gemeinsamen Verkehrspolitik von 2011.

Die Verordnung ist weitgehend kompatibel mit den EU-Verordnungen für den Schienensektor. Unklare Verantwortungszuweisungen wurden in neueren Gesetzwerken geklärt (z.B.: Direktive 2012/34/EU und Viertes Eisenbahnpaket). Die einzige relevante Überschneidung zwischen Gesetzestexten kann hinsichtlich der Verordnungen (EU) Nr. 913/2010 und 1315/2013 über die Unionsleitlinien für den Aufbau des transeuropäischen Verkehrsnetzes identifiziert werden. Die den Frachtkorridor-Gremien zugeordneten strategischen Aufgaben wie Investitionsplanung, Einführung des Europäischen Managementsystems für den Schienenverkehr oder Herstellung der Interoperabilität sind nicht klar und überschneiden sich mit jenen für die transeuropäischen Kernnetzkorridore. Dies führt dazu, dass den Frachtkorridor-Gremien Aufgaben zugeordnet werden, für die sie keine Kompetenz haben, so dass Doppelarbeit entsteht.

Die Tätigkeit der Frachtkorridore wurde mit Hilfe mehrerer Zuschussregelungen unterstützt und vor allem durch die Connecting Europe Fazilität finanziert.

Darüber hinaus wurden viele finanzielle Instrumente genutzt, um die Entwicklung des Schienensektors und die Verkehrsverlagerung von der Straße auf die Schiene zu unterstützen. Die Initiativen begannen mit dem Marco Polo Programm, um die Entwicklung des intermodalen Transports mit Sondermitteln zu unterstützen, welche jedoch nicht fortgeführt wurden. Das Programm wurde 2013 in die Connecting Europe Fazilität eingegliedert, was zu reduzierter Finanzierung für den intermodalen Gütertransport führte. Die Finanzierung von Eisenbahnforschung und -entwicklung hat sich dank des Horizon 2020 Rahmenprogramms verbessert, insbesondere durch die Einrichtung des öffentlich/privaten Forschungsprojekt Shift2Rail. Jedoch kann enthält diese Forschung keine explizit für die Entwicklung der Frachtkorridore zugeschnittenen Teilprojekte. Auch bei der allgemeinen Finanzierung von Infrastrukturvorhaben ist keine Trennung der Finanzierungen von Personen- und Güterschienenverkehr oder von Frachtkorridoren und anderen Teilen der Kenrnetze möglich.

Mitgliedstaaten haben die Kompetenz für die nationalen Teile der Investitionsplanung. Trotz der Tatsache, dass EU-Richtlinien (z. B. zur Interoperabilität) in nationales Recht umgesetzt wurden, sind die Mitgliedstaaten weitgehend unabhängig bei Entscheidungen über Verkehrsinvestitionsprojekte. Ihre Planung kann von der EU durch Ko-Finanzierung beeinflusst werden.

Internationale Schienenverbindungen zu nicht-EU Nachbarn und asiatischen Ländern unterstreichen die Bedeutung gemeinsamer Regeln für das Schienenverkehrsmanagement und unterstützen die Zielsetzungen der Verordnung. Die Frachtkorridore bieten eine Anzahl von Verbindungspunkten für Ferntransporte zwischen Ost und West. Die rigorose chinesische Politik zur Priorisierung der Eisenbahnen kann die europäische Schienenverkehrspolitik unterstützen, wenn die politischen Beziehungen sich positiv entwickeln.

EU Mehrwert

Die Verordnung ist in eine Vielzahl von Direktiven und Verordnungen eingebettet, die auf eine Neuorganisierung des Europäischen Schienensektors abzielen. Sie betrifft die Koordinierung und das Management der Kapazitätszuweisung für definierte Schienengüterverkehrskorridore, indem sie Dienstleistungsinstitutionen in Form der Korridor One-stop Shops einrichtet und standardisierte Instrumente zur Kapazitätszuweisung in Form von vorab vereinbarten Zugtrassen und Reservekapazitäten einführt, welche auf eine Priorisierung internationaler Schienengütertransporte abzielen. In diesem Kontext wurden transnationale Gremien auf der Korridorebene eingerichtet, die Infrastrukturmanager und Schienenverkehrsabteilungen der nationalen Regierungen zusammenbringen, um

Probleme in Bezug auf Management und Leitung/Aufsicht für die Korridore zu lösen. Das hat die europäische Zusammenarbeit und die Bereitschaft stimuliert, gemeinsame Lösungen für Probleme des grenzüberschreitenden Schienengüterverkehrs zu entwickeln.

Die Entwicklung einer (informellen) Gemeinschaft für den europäischen Schienengüterverkehr spiegelt sich in Aktivitäten wider, die über die Bestimmungen der Verordnung hinaus gehen, wie beispielsweise die Einrichtung von Arbeitsgruppen, die Abstimmung zwischen den Korridoren oder die netzwerkweiten Tätigkeiten von RailNetEurope bezüglich der Entwicklung von Leitlinien, Handbüchern, Leistungsindikatoren und IT-Instrumenten. Diese Aktivitäten sind verbunden mit einer starken Unterstützung von betroffenen Gruppen auf Seiten des Marktes wie Eisenbahnunternehmen, Terminalbetreiber, Transportunternehmen und Speditionen, repräsentiert durch Verbände, wie auch auf Seiten der Politik, wie die Erklärungen von Rotterdam, Wien und Leipzig demonstrieren. Die Schaffung eines gemeinsamen Bewusstseins der betroffenen Gruppen, dass der Schienengütertransport nur erfolgreich entwickelt werden kann, wenn alle involvierten Parteien aktiv kooperieren, kann als wichtigster EU Mehrwert betrachtet werden, den die Verordnung bislang erreicht hat.

Diese positiven Reaktionen betroffener Gruppen sind notwendige Bedingungen, um das übergreifende Ziel zu erreichen, den Schienengütertransport wettbewerbsfähig zu machen und seinen Transportanteil zu steigern. Um jedoch hinreichend zu sein, sollten die Bestimmungen der Verordnung zu den betrieblichen Leistungsangeboten verbessert werden, um Produktivitätsgewinne zu realisieren. Ein zeitlicher Vergleich der Leistungsindikatoren wie durchschnittliche Betriebsgeschwindigkeit, Pünktlichkeit und Verlässlichkeit auf den Frachtkorridoren zeigt, dass nur ein kleiner (Betriebsgeschwindigkeiten) oder gar kein Fortschritt (Pünktlichkeit) erzielt wurde. Ein Vergleich dieser Indikatoren von Routen auf und jenseits der Frachtkorridore zeigt, dass sich die ausgewiesenen Frachtkorridorlinien nicht als bessere Alternative herausstellen. Das wirft die Frage auf, ob die in der Verordnung enthaltenen Instrumente tatsächlich die Managementprozesse vereinfachen und die Marktbedürfnisse treffen.

Die Einführung von Korridor One-Stop Shops folgt einer intuitiven Logik der Vereinfachung administrativer Prozesse für die Nutzer, d.h. in der Regel die Eisenbahnverkehrsunternehmen. In der Praxis hingegen können sie im Falle von Korrekturen der Vorab-Zuweisungen, welche häufig auftreten, die administrativen Prozesse komplizieren. Vorab vereinbarte Zugtrassen und Reservekapazität sind im europäischen Recht als rigide Instrumente definiert und zwingen Infrastrukturmanager, Kapazitäten zu reservieren, welche ungenutzt bleiben können. Deshalb haben einige Frachtkorridore flexiblere Trassenprodukte eingeführt. Abgesehen von bestimmten Ausnahmen haben Infrastrukturmanager jedoch wenig Anreize, die Instrumente der Frachtkorridore ausgiebig zu nutzen.

Daraus folgt, dass der EU Mehrwert der Bestimmungen der Verordnung für das Kapazitätsmanagement beschränkt ist. Eine positive Auswirkung kann insofern identifiziert werden, als die Anwendung der Bestimmungen zu wichtigen Erfahrungen mit speziellen Dienstleistungsinstitutionen und Kapazitätsmanagementprodukten für den internationalen Schienengüterverkehr geführt haben. Die gesammelten Erfahrungen zu den Kapazitätsmanagementprodukten der Verordnung hat eine Ausgangsbasis für die Entwicklung flexibler und marktkonformer Instrumente (z. B. im Laufe des Timetable Redesign Projekts und der Entwicklung moderner IT Instrumente auf Netzwerk-Ebene) geschaffen.

Die Verordnung befasst sich auch mit strategischen Aufgaben wie der (indikativen) Investitionsplanung und Entwicklung der Interoperabilität. Die Bestimmungen enthalten sogar Anforderungen für Kosten-Nutzen-Analysen und Finanzplanungen. Die Leitungs-

und Aufsichtsgremien der Frachtkorridore haben jedoch weder die Ressourcen für die strategische Planung – welche in den meisten Fällen Personen- und Güterverkehr umfassen – noch die Kompetenz für deren Umsetzung. Wenngleich die strategischen Aufgaben als solche höchst relevant sind, richten sich die Bestimmungen der Verordnung nicht an die relevanten entscheidungsbefugten Stellen.

1. INTRODUCTION

This is the final report of the support study to the evaluation of Regulation (EU) No 913/2010 of the European Parliament and of the Council of 22 September 2010 (henceforth the Regulation) concerning a European rail network for competitive freight, which has established rules for the organisation of international rail corridors with a view to the development of a European railway network for competitive freight. The Regulation sets out the rules for the selection, organisation, management and the indicative investment planning of freight corridors.

The work has been performed by TRT Trasporti e Territorio and M-Five GmbH, with MC Mobility Consultants GmbH and Transport and Environmental Policy Research (TEPR) as subcontractors, under the framework contract MOVE/A3/SER/2017-257 and request for service No MOVE/C3/2019-117.

1.1. Purpose and scope of the evaluation

The purpose of this support study is to provide the Commission with evidence on the implementation and performance of the Regulation and its impacts in the EU. To that end, it answers 21 evaluation questions grouped under the evaluation criteria of relevance, effectiveness, efficiency, coherence and EU added value, in line with the Better Regulation Guidelines.

The primary period considered in this evaluation is the period since 2010, when the Regulation was adopted. However, since the initial nine rail freight corridors have become gradually operational between 2013 and 2015, the discussions on the developments related to the Regulation focus primarily on this period. The primary geographical scope of the evaluation is the EU Member States where the Regulation has been applied[3], plus Switzerland and Norway.

1.2. Structure of the report

The report is organised as follows:

- Chapter 2 presents the methodology followed in the study. It includes the final evaluation matrix developed for the evaluation, the desk and field research and the four topical case studies developed in the course of the study. This chapter also discusses the research limitations and robustness of the findings of the study;
- Chapter 3 provides a discussion on the background to the evaluation and its intervention logic;
- Chapter 4 presents the baseline developed for this study;
- Chapter 5 gathers the answers to the evaluation questions, developed on the basis of desk and field research. The answers are presented individually for each evaluation question, presenting an analysis of the relevant sub-questions, the conclusions derived and identifying any problems or limitations encountered; and
- Chapter 6 summarises the overall conclusions by evaluation criterion and presents the recommendations.

[3] According to Article 24, the Regulation does not apply to the Republic of Cyprus and Malta, as no railway system is established within their territory.

An accompanying document comprises the annexes to this report as follows:

- Annex A displays the updated intervention logic diagram;
- Annex B reports the evaluation matrix that was used as the methodological guidance for the answers to the evaluation questions;
- Annex C provides the list of the documents reviewed as part of the desk research;
- Annex D consists of the report on all of the stakeholder consultation activities, which is in turn provided as a stand-alone accompanying document;
- Annex E consists of (i) the Geographic Information Systems dataset on international rail freight, (ii) rail freight flow data for the freight corridors and (iii) the analysis of rail freight transport between freight corridor countries (the latter as accompanying maps displaying the analysis of the flows). This annex also presents the data and information elaborated to feed the key performance indicators (see also accompanying Excel file);
- Annex F presents the topical case studies;
- Annex G provides a full description of the evaluation baseline;
- Annex H reports on the elaboration of the assessment of the implementation of Regulation (EU) 913/2010 carried out by the Commission;
- Annex I comprises the detailed analyses that were developed to respond to the evaluation questions and the relevant sub-questions; and
- Annex J lists the references of the documents mentioned throughout the report and in the previous annexes.

2. METHODOLOGY

This chapter of the report presents the methodology used for the evaluation, which is based on the final evaluation matrix and the horizontal tasks conducted to gather the elements (i.e., data and other qualitative and quantitative evidence) necessary to respond to the evaluation questions.

2.1. Final evaluation matrix

The final evaluation matrix, which reflects the approach that was adopted in the development and analysis of the evaluation questions, is presented in Annex B to this final report.

It defines in particular the evaluation sub-questions, the method used to respond to the questions and the related key performance indicators as well as the sources of information used. The work carried out in the course of the study has allowed the approach to be streamlined and the limitations of the sources, including any data gaps, to be highlighted.

2.2. Approach for horizontal tasks

2.2.1. Desk research

The desk research was one of the key horizontal tasks of the study.

This task principally comprised an analysis of the available literature. A detailed review has been conducted in order to draw a complete background picture of the existing documents and of the qualitative and quantitative analysis that had already been developed, especially with respect to the implementation of the freight corridors. More than 130 documents were identified and the summary of the documents consulted and used to inform the study, as listed in Annex C.

The literature review was divided into five main areas, as follows:

1. EC policy documents and EU legislation, which were relevant for the coherence and effectiveness analysis;
2. Documents prepared by the rail freight corridors (i.e., annual and performance reports, reports on the monitoring of the implementation (Article 22), transport market studies, corridor information document and other studies);
3. Literature and studies on EU rail freight (corridors) and Eurostat statistics;
4. Guidelines and publications of RailNetEurope[4] that are related to the freight corridors; and
5. Member State and rail sector declarations and policy documents on (international) rail freight.

To facilitate the review and use of the outcomes identified from the relevant literature, each document has been categorised by:

- title and source;
- key words;
- sectors/actors (e.g., national and European public institutions, interest groups, trade and business associations);

[4] RailNetEurope (RNE) is an association set up by the majority of the European infrastructure managers and allocation bodies with the aim of facilitating international traffic on the European rail infrastructure.

- main topics addressed (e.g., quality of the service, capacity allocation, governance structure, bottlenecks, rail freight performance, traffic management, etc.);
- main findings;
- relevance for the evaluation criteria (measured on a qualitative scale, from 3 – low relevance – to 1 – high relevance);
- importance for the evaluation questions; and
- importance for the tasks of the evaluation study.

2.2.2. Consultation activities (field research tool)

As a key pillar of the evaluation methodology, the consultation of concerned stakeholders[5] encompassed three main activities:

- targeted survey questionnaires;
- targeted interviews; and
- the analysis of the responses to the open public consultation conducted by the Commission.

In addition to this, consultation activities also included participation in two expert group meetings of the Single European Railway Area Committee. One took place at the beginning of the project in October 2019, while the second one was held in July 2020 via videoconference.

The targeted survey questionnaire was developed in close cooperation with the Commission's officers in charge of the evaluation and was tailored by stakeholder group. The survey questionnaire was organised into 13 sections, reflecting the sequence of the articles of the Regulation as follows[6,7] :

- Section 1: Information on the organisation;
- Section 2: General questions;
- Section 3: Designation of the freight corridors – Definition, creation and modification (Articles 2, 3, 4, 5, 6 and 7);
- Section 4: Governance structure of the freight corridors (Article 8);
- Section 5: Measures for implementing the freight corridors (Articles 9 and 10);
- Section 6: Investment and planning (Articles 11 and 12);
- Section 7: Capacity management (Articles 13, 14 and 15):
  - → Subsection 7.1: Corridor one-stop shop;
  - → Subsection 7.2: Temporary capacity restrictions;
- Section 8: Traffic management (Articles 16 and 17);
- Section 9: Information provision (Articles 18 and 19);
- Section 10: Performance monitoring;
- Section 11: Information to elaborate the baseline scenario (i.e., situation without the Regulation, or "no policy situation");

[5] As part of the task on the design of the evaluation, eight exploratory interviews were also conducted in the early phase of the study.

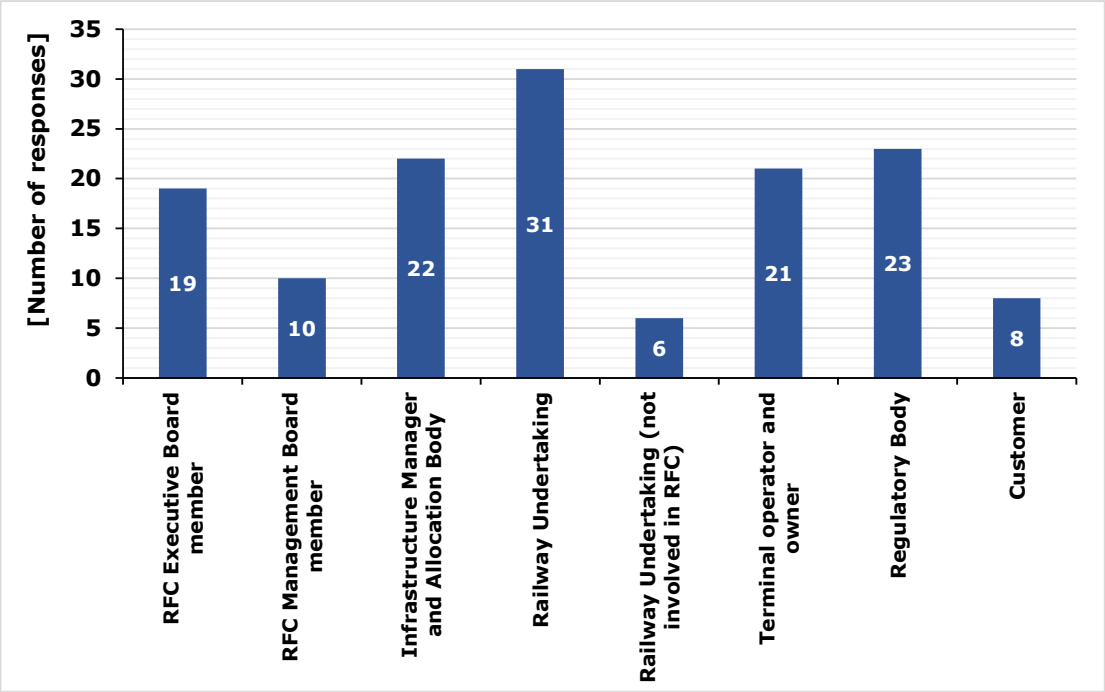
[6] The questions of the targeted survey questionnaire were clustered into two main groups, namely "core" and "optional". The "core" questions constituted the structure of the questionnaire submitted to the stakeholders. The "optional" questions were retained for the targeted interviews conducted in the context of the case studies.

[7] Questions 2.4, 4.18 and 7.2 of the targeted survey-questionnaire were taken from the open public consultation.

- Section 12 Direct, indirect costs and benefits arising from the provisions of the Regulation; and
- Section 13: Suggestions and other issues.

All in all, 139 targeted questionnaires were returned in response to a request from the Commission's desk officers; the distribution of responses by stakeholder group is illustrated in Figure 1. The graph also shows that all relevant stakeholder groups are represented, and thus the responses obtained cover all the different points of view. With respect to the geographical coverage, responses came from all the Member States crossed by the designated freight corridors, plus Norway, Serbia, Switzerland and the United Kingdom.

Figure 1: Targeted questionnaires returned by type of stakeholder group



Source: elaboration based on the responses to the targeted survey questionnaire

The thorough analysis of the responses is presented in the report on the stakeholder consultation activities, which is attached to this report as Annex D.

The targeted interview programme, comprising more than 40 interviews was another important element of the stakeholder engagement. In particular, the focus of the targeted interviews was on obtaining inputs to the four topical case studies (see section 2.2.3) and to support the evaluation. The interviews undertaken in the context of the topical case studies were necessary to enable the in-depth analysis of certain issues of strategic importance for the evaluation of the Regulation.

To support the targeted interviews, an interview guide, including a set of questions for each case study, was prepared and agreed with the Commission's officers. The interview guide was further tailored for each stakeholders group. As requested in the task's specification, interview reports were drafted to summarise the key points in relation to each of the questions and the extent to which these responses varied by stakeholder group.

2.2.3. Topical case studies

Four topical case studies were developed according to the specifications of the support study. Table 1 summarises the object of the four case studies and the link with the

evaluation questions, as detailed in the evaluation matrix. A detailed presentation of the case studies can be found in Annex F.

The topical case studies are based on three methodological pillars, namely (i) an analysis of the legal background, (ii) a literature review of existing studies, especially freight corridor reports and (iii) the consultation of stakeholders and in-depth targeted interviews, as specified in the previous section.

Table 1: Object of the topical case studies and link with the evaluation questions

Case study 1	**Setting up an international rail freight service – an in-depth process**
Description/objective of the case study	The goal of this case study was to examine the entire production life-cycle (i.e., all of the steps necessary on the part of an operator of international rail freight services – including technical, operational and safety aspects) of undertakings in providing international rail freight services from the perspective of a customer. Accordingly, the focus of the analysis was the application process, railway undertaking to end client coordination, interfaces (e.g., RailNetEurope path coordination system), experiences in using/not using the corridor one-stop shop, etc. To the extent possible this is presented in the form of process charts.
Link to evaluation questions	EQ1, EQ2, EQ3, EQ4 on relevance EQ8, EQ10 on effectiveness
Case study 2	**Infrastructure capacity provided by the RFCs – quality of the products, processes, systems and information provided by the C-OSS and the infrastructure managers**
Description/objective of the case study	This case study focused on identifying in a quantitative way the level of actual allocated capacity (via the different corridor one-stop shops) in comparison to the total capacity available (maximum theoretical capacity) and on clearly specifying the reasons for the limited offer. On a more qualitative level, the case study aimed at identifying the reasons why the corridor one-stop shops are not approached for capacity by the railway undertaking (i.e., railway undertakings order direct via infrastructure managers) and why there is resistance to modifying processes according to market needs on the part of the infrastructure managers.
Link to evaluation questions	EQ5, EQ6, EQ9, EQ10 on effectiveness
Case study 3	**Coordination of infrastructure works restricting available capacity**
Description/objective of the case study	This case study aimed at evaluating the contribution of the freight corridors to the coordination and harmonisation of technical capacity restrictions on the corridor and the impact that these technical capacity restrictions have on international freight traffic, as well as the reasons that cause the poor coordination.
Link to evaluation questions	EQ 6 on effectiveness
Case study 4	**Coordination of capacity and operations between railway infrastructure and terminals**
Description/objective of the case study	The overall aim of this case study was to analyse the extent to which the Regulation has been effective in improving intermodality along freight corridors, and to which degree the Regulation and the processes and tools based on it are coherent with other relevant legislation, especially with Regulation (EU) 2017/2177 on access to service facilities and rail-related services.
Link to evaluation questions	EQ5, EQ 6, EQ 8 on effectiveness

Source: compilation of the authors

2.3. Evidence collection phase

The desk and field research, as well as the quantitative datasets made available by RailNetEurope for the purpose of this evaluation study, were the pillars of the evidence collection phase and provide the knowledge base for the development of a set of quantitative and qualitative key performance indicators.

The key performance indicators were instrumental to informing the responses to the evaluation questions, to developing the topical case studies, to defining the evaluation baseline and to elaborating the general analysis of the transport flows relevant for the European rail freight network. Table 2 summarises the steps of the evidence collection phase.

Table 2: Steps of the evidence collection phase

Phase	Research tool	Category of key performance indicator	Analysis informed
1 Desk research	• Literature review	• Governance and institutions • Management and operation • Information • Rail freight statistics • Market studies and benefits, costs, funding and future prospects of the freight corridors	• Responses to the evaluation questions • Case studies • Definition of the evaluation baseline • General analysis of the transport flows relevant for the European rail freight network
2 Field research	• Targeted survey questionnaire • Targeted interviews • Open public consultation • Participation in expert group meetings		
3 RailNetEurope	• Specific datasets		

Source: compilation of the authors

The literature sources gathered during the desk research were relatively broad and provided both quantitative and qualitative elements. For some key performance indicators, the quantitative data are relatively heterogeneous across the various sources and this required, for the purpose of checking robustness, a triangulation with the other research tools.

For the field research, a good level of participation was achieved across the activities and for all the stakeholder groups.

The information gathered from the targeted survey questionnaire provides both quantitative and qualitative evidence. The responses to the multiple-choice questions were analysed using a dedicated tool and the outputs returned as part of the report on the stakeholder consultation activities. Although the targeted survey questionnaire was complex and time-consuming for the stakeholders (see section 2.2.2), there were no significant data limitations or information gaps.

Taking into account the availability for follow-up interviews indicated by the stakeholders returning the survey questionnaire, an intense programme of targeted interviews was conducted. The targeted interviews and the related tailored questionnaires provided quantitative and qualitative elements for the development of the topical case studies. For this phase, there are also no specific limitations to report.

Throughout the consultation, a number of written contributions were received representing all stakeholder groups (including the umbrella organisations) in the form of approved

minutes of the targeted interviews and their own position papers. Finally, the report developed for the open public consultation and the participation of the contractor in the expert group meetings complemented the field research tools.

The datasets of RailNetEurope provided valuable elements to inform the definition of the evaluation baseline, notably allowing the development of a comparison of the performance of freight trains running on pre-arranged train paths and on other paths. The data available refer to one year only (i.e., 2019), but it can be reasonably assumed that the information provided depicts the most mature situation achieved after the establishment of the freight corridors. Where feasible, the results of the analysis of the dataset provided by RailNetEurope were cross-checked with the responses obtained to questions that were tailored to gather information on the situation without the Regulation being implemented. With respect to the performance indicators considered, the two sources of information were not in contradiction.

On the basis of the collection phases conducted and the research tools used, the overall information available is provided in Annex E, by category of key performance indicator. In sum, the data and the views collected in this study enabled the presentation of a detailed evaluation of the issues around the freight corridors in general and the Regulation in particular.

3. BACKGROUND TO THE EVALUATION

3.1. The Regulation as part of a wider policy framework

Launching the White Paper "*A Strategy for revitalising the community's railways*" in 1996[8], the European Commission committed to achieving open access for rail freight and developed the idea of encouraging Member States to select a number of promising transport routes (i.e., "freeways") after consulting infrastructure managers, railway enterprises and freight shippers.

The idea was that on the identified freeways the infrastructure managers were expected to cooperate to increase the priority given to freight transport in the allocation of train paths and in ensuring that infrastructure charges were fair and attractive to freight operators. Also, in so doing, it was thought that infrastructure managers would reduce waiting times at border crossings that were caused by administrative procedures.

The development of a one-stop shop joint body was also identified as being pivotal to handling the demand for train paths, and the creation of the freeways was intended to induce a wide range of benefits, including to increase the experience with collaboration for the infrastructure managers, leading to new thinking about infrastructure and its potential to provide different types of services. Ultimately it was hoped that open access to the infrastructure would attract new operators and that the one-stop shop would simplify the obtaining of international train paths.

With the White Paper of 2001 "*European transport policy for 2010: time to decide*"[9], the European Commission proposed the creation of a clean and efficient transport system, and to achieve this proposed objective, in its mid-term review[10] it proposed to concentrate on the development of "co-modality" for the optimal use of all modes of transport. This development was based on creating an internal European transport market. Progress in this direction was made for other transport modes, such as aviation and road. However, rail transport was lagging behind.

In parallel, between 2001 and 2007, three legislative packages were adopted with the aim of gradually opening up rail transport service markets to competition, making national railway systems interoperable and defining appropriate framework conditions for the development of a Single European Railway Area.

The First Railway Package of 2001[11] enabled rail operators to have access to the trans-

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[8] European Union (1996). White paper, A Strategy for revitalising the Community's railways, 30.07.1996, COM(96)421 final.

[9] Commission of the European Communities (2001). White Paper, European transport policy for 2010: time to decide. COM(2001) 370 final, Brussels, 12.9.2001.

[10] Commission of the European Communities (2006). Communication from the Commission to the Council and the European Parliament Keep Europe moving - Sustainable mobility for our continent - Mid-term review of the European Commission's 2001 Transport White Paper. COM(2006) 314 final, Brussels, 22.06.2006.

[11] The First Railway Package consists of the following directives: (i) Directive 2001/12/EC of 26 February 2001 amending Council Directive 91/440/EEC on the development of the Community's railways, (ii) Directive 2001/13/EC of 26 February 2001 amending Council Directive 95/18/CE on the licensing of railway undertakings and (iii) Directive 2001/14/EC of 26 February 2001 on the

European network on a non-discriminatory basis. To improve Europe's rail freight options, the Commission proposed the creation of a one-stop-shop to market the freeways. It underlined the need to improve the distribution of train paths, establish a tariff structure which reflects relevant costs, reduce delays at borders and introduce quality criteria.

The Second Railway Package of 2004[12] accelerated the liberalisation of rail freight services by fully opening the rail freight market to competition from 1 January 2007. In addition, the package created the European Railway Agency, introduced common procedures for accident investigation and established safety authorities in each Member State.

The Third Railway Package[13] of 2007 introduced open access rights for international rail passenger services including cabotage to be achieved by 2010. Operators were able to pick up and set down passengers at any station on an international route, including at stations located in the same Member State. Furthermore, the Third Railway Package introduced a European driver licence allowing train drivers to work on the entire European network.

Furthermore, the trans-European Transport Network programme, the development and deployment of the European Railway Traffic Management System and the technical specifications relating to telematics applications relating to freight were also progressing. In 2005, the members of RailNetEurope defined the "RNE corridors", according to which a corridor manager was in charge of harmonising paths at the borders with the aim of improving the international capacity offer. Each infrastructure manager was acting as one-stop shop for capacity for the corridor[14].

All of these initiatives were conceived to improve infrastructure management and ensure that the progress necessary for integrating rail transport and developing freight could become a reality.

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allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification.

[12] The Second Railway Package consists of the following directives: (i) Directive 2004/49/EC of 29 April 2004 on safety on the Community's railways and amending Council Directive 95/18/CE on the licensing of railway undertakings and Directive 2001/14/CE on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification, (ii) Directive 2004/50/EC of 29 April 2004 amending Council Directive 96/48/EC on the interoperability of the trans-European high-speed rail system and Directive 2001/16/EC of the European Parliament and of the Council on the interoperability of the trans-European conventional rail system and (iii) Directive 2004/51/EC of 29 April 2004 amending Council Directive 91/440/EEC on the development of the Community's railways. Regulation (EC) No 881/2004 of the European Parliament and of the Council of 29 April 2004 established a European Railway Agency.

[13] The Third Railway Package consists of the following directives: (i) Directive 2007/58/EC of the European Parliament and of the Council of 23 October 2007 amending Council Directive 91/440/EEC on the development of the Community's railways and Directive 2001/14/EC on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and (ii) Directive 2007/59/EC of the European Parliament and of the Council of 23 October 2007 on the certification of train drivers operating locomotives and trains on the railway system in the Community.

[14] The ERTMS Corridors were defined in Decision (EU) 2012/88 on the technical specification for interoperability relating to the control-command and signalling subsystems of the trans-European rail system.

Against this background, in 2008 the Commission undertook, in its Communication of October 2007 *"Towards a rail network giving priority to freight"*[15], to present proposals for the creation, in a coordinated manner, of international rail corridors that gave priority to freight. This option was favoured over the creation of rail corridors dedicated to freight, which was deemed too one-sided, expensive and would be too slow to implement. The main conclusion drawn was that the short-term creation of international rail corridors for competitive freight would contribute substantially to improving the competitiveness of rail transport.

Moreover, in April 2008 the Council of Ministers invited the Commission to devise measures for achieving the efficient operation of international rail freight services through the reinforcement of cooperation between infrastructure managers. This was to be done in the fields of operations and investment and through the identification of those cross-border corridors, including co-modal sections, along which the efficient flow of international rail freight traffic should be ensured, in terms of capacity and investment planning and in terms of reliable and sufficient train paths.

On the basis of these elements, the Commission examined the three options of (i) not undertaking any new measure, (ii) enhancing measures which have already been implemented and, where necessary, undertaking new policy initiatives and (iii) proposing new legislative measures. The three options were intended to lead to the creation of a European rail network for competitive freight consisting of international corridors, and were analysed to assess their qualitative and quantitative impacts. According to this analysis, the third option was selected as it was considered to deliver the most positive effects and provided a number of guarantees to both the Community's and the Member States' collective involvement in the objectives pursued.

The Commission proposed a Regulation in November 2008 concerning a European rail network for competitive freight, which underwent considerable amendments during the legislative process and was finally adopted in 2010, as Regulation (EU) No 913/2010.

The key components of the Regulation are:

- Chapter I containing general provisions, namely purpose, scope and definitions;
- Chapter II focusing on the designation and governance of international rail corridors for competitive freight;
- Chapter III concerning investment in the freight corridor;
- Chapter IV on the management of the freight corridor; and
- Chapter V containing final provisions, namely committee procedure, monitoring implementation, report and transitional measures.

The Annex of the Regulation defines nine freight corridors, six of which were to be established by November 2013 and three by November 2015. Regulation (EU) No 1316/2013 establishing the Connecting Europe Facility[16] amended the routes of the initial freight corridors with the aim of aligning these with the trans-European Transport Network

[15] Commission of the European Communities (2007). Communication from the Commission to the Council and the European Parliament - Towards a rail network giving priority to freight, COM(2007) 608 final, Brussels 18.10.2007.

[16] Regulation (EU) No 1316/2013 of the European Parliament and of the Council of 11 December 2013 establishing the Connecting Europe Facility, amending Regulation (EU) No 913/2010 and repealing Regulations (EC) N° 680/2007 and (EC) No 67/2010, 20.12.2013.

core network corridors created by that Regulation.

After its adoption, the implementation phase saw the freight corridors developing at a different pace. In 2016, intensive discussions took place for the creation of two new freight corridors, demonstrating the interest of Member States and sector stakeholders in the freight corridors concept. In January 2017, the Commission adopted an implementing decision[17] regarding the creation of the "Amber" freight corridor and in March 2018 an implementing decision[18] regarding the creation of the "Alpine - Western Balkans" freight corridor.

In addition, some corridors have been extended. The North Sea - Baltic freight corridor was extended in 2015 to southern Poland and to Czechia[19]. Moreover, the Atlantic and the North Sea-Mediterranean corridors have also been extended through implementing decisions respectively adopted in January[20] and March 2018[21]. Eventually, the Czech - Slovak freight corridor, namely the initially designed freight corridor number 9, was set to expire in 2020 and to become the new Rhine - Danube freight corridor.

Meanwhile, between 2012 and 2017, the recast Single European Railway Area Directive[22], the Fourth Railway Package[23] and Commission Delegated Decision (EU) 2017/2075[24] were

[17] Commission Implementing Decision (EU) 2017/177 of 31 January 2017 on the compliance with Article 5 of Regulation (EU) No 913/2010 of the European Parliament and of the Council of the joint proposal to establish the 'Amber' rail freight corridor, 2.2.2017.

[18] Commission Implementing Decision (EU) 2018/500 of 22 March 2018 on the compliance of the proposal to establish the Alpine-Western Balkan rail freight corridor with Article 5 of Regulation (EU) No 913/2010 of the European Parliament and of the Council, 26.3.2018.

[19] Commission Implementing Decision (EU) 2015/1111 of 7 July 2015 on the compliance of the joint proposal submitted by the Member States concerned for the extension of the North Sea-Baltic rail freight corridor with Article 5 of Regulation (EU) No 913/2010 of the European Parliament and of the Council concerning a European rail network for competitive freight, 9.7.2015.

[20] Commission Implementing Decision (EU) 2018/300 of 11 January 2018 on the compliance of the joint proposal submitted by the Member States concerned for the extension of the Atlantic rail freight corridor with Article 5 of Regulation (EU) No 913/2010 of the European Parliament and of the Council, 28.2.2018.

[21] Commission Implementing Decision (EU) 2018/491 of 21 March 2018 on the compliance of the joint proposal submitted by the Member States concerned for the extension of the North Sea Mediterranean rail freight corridor with Article 5 of Regulation (EU) No 913/2010 of the European Parliament and of the Council, 23.3.2018.

[22] Directive 2012/34/EU of the European Parliament and of the Council of 21 November 2012 establishing a single European railway area (recast) – the First Railway Package.

[23] The Fourth Railway Package consists of a "technical pillar" adopted in April 2016 and a "market pillar" adopted in December 2016. The Fourth Railway Package is a set of six legislative texts designed to complete the single market for rail services (Single European Railway Area). Its overarching goal is to revitalise the rail sector and make it more competitive vis-à-vis other modes of transport.

[24] European Union (2017) Commission Delegated Decision (EU) 2017/2075 of 4 September 2017 replacing Annex VII to Directive 2012/34/EU of the European Parliament and of the Council establishing a single European railway area.

adopted introducing, *inter alia*, more detailed rules on planning and maintenance.

In 2016, the Commission launched the evaluation of the Regulation launching an open public consultation, involving (i) an audience familiar with the freight corridors or with the European railway sector, and (ii) a non-expert audience without any particular knowledge of the freight corridors or the Regulation. This first attempt to evaluate the Regulation was abandoned as it was decided that the freight corridors needed more time before being evaluated and therefore the effects of the Regulation could not be fully measured. Notwithstanding this, the results of the open public consultation were used in the framework of the 2018 Commission Staff Working Document accompanying the report on the application of the Regulation[25].

A major incident occurred in the summer of 2017 close to Rastatt (Germany), which resulted in the complete disruption of rail traffic on the Rhine-Alpine freight corridor for seven weeks and clearly showed the need for the further improvement of cooperation to organise international rail traffic. The negative effect of the incident on rail freight was considerable and demonstrated the weaknesses of this transport mode and a lack of procedures to address such an incident at international level.

The incident triggered a reaction from the freight corridors that required a proper analysis of its consequences to be addressed in this evaluation study.

3.2. Intervention logic

The key overall challenge addressed by the Regulation is the improvement of the competitiveness of rail freight compared to other modes of transport. To this end, the quality of services provided by infrastructure managers to operators of international rail freight services should improve.

The general objectives addressed by the Regulation are as follows:

- improving cooperation between infrastructure managers and other stakeholders;
- giving "sufficient priority" to rail freight traffic to meet freight market needs;
- simplifying the use of rail infrastructure; and
- strengthening the integration of rail freight in multimodal transport.

Correspondingly, the specific objectives are as follows:

- Objective 1: Improve coordination between infrastructure managers, Member States, railway undertakings and terminal owners/operators both between these different groups of actors and – within the groups – across borders;
- Objective 2: Coordinate and plan investments to ensure that the infrastructure capacities and capabilities available along the corridor meet the needs of international rail freight traffic, including with respect to interoperability;
- Objective 3: Improve the operational conditions for international rail freight services, in particular by coordinating traffic management along the corridors, including in the event of a disturbance, and by monitoring the performance of rail freight services on the corridors;

[25] European Commission (2018). Commission Staff Working Document, Accompanying the document Report from the Commission to the European Parliament and the Council on the application of Regulation (EU) 913/2010, in accordance to its Article 23.

- Objective 4: Guarantee international freight trains access to adequate infrastructure capacity and recognise the needs of other types of transport, including passenger transport;
- Objective 5: Facilitate the use of rail infrastructure for international rail freight services and support fair competition between rail freight service providers; and
- Objective 6: Improve intermodality along the corridors.

The intervention logic diagram (see Annex A), includes the changes introduced to the initial version proposed in the task specifications (see the boxes with text in black).

On the basis of the preliminary desk research carried out and exploratory interviews conducted, three additional problems were included:

- operations at terminals (i.e., maritime ports and inland intermodal facilities) and the movements of last-mile freight trains are not coordinated with the wider railway network. This problem should be addressed to further improve the quality of the services provided by the railway undertakings to logistics service providers and shippers;
- path allocation for international rail freight services is not optimised between infrastructure managers and undertakings, which is why it is important to ensure that path requests and path offers are harmonised between all involved parties; and
- investments in the freight corridors related to the development of interoperable systems and the increase of capacity are not coordinated. The same holds true for the works on infrastructure and its equipment, which restricts the available capacity.

Moreover, emphasis was added to the specific objective of improving intermodality along the freight corridors. According to the exploratory interviews carried out, this objective can be achieved through better coordination with terminal operators.

Finally, with respect to the activities, two minor changes were introduced to take account of the fact that infrastructure managers and the freight corridors coordinate traffic management, capacity and operations for international traffic. A missing link in the original intervention logic diagram was introduced and now the activity box "Infrastructure managers coordinate traffic management incl. by setting targets, guidelines and rules" is connected directly with the boxes presenting the outputs of the Regulation.

4. BASELINE

4.1. Introduction

The evaluation of the impacts of the Regulation requires a comparison of the current situation (with the intervention), against the "situation under a no policy" situation, which represents the "counterfactual situation", or "baseline".

The definition of the baseline enables the investigation of the effects that can be attributed to the implementation of the Regulation. Therefore, the definition of the evaluation baseline plays an important role in the ex-post evaluation of the Regulation and in the understanding of the observed changes.

The complexity and heterogeneity of international rail freight transport makes it necessary to go beyond a standard approach to defining an evaluation baseline and requires a methodology capable of investigating the current situation using a wider set of approaches. What is more, changes in several of the performance indicators selected for this evaluation support study cannot be estimated by way of a modelling exercise.

Further to this, the following elements make the definition of the evaluation baseline and the isolation of the effects stemming from the implementation of the Regulation a challenging exercise.

The preparatory impact assessment carried out in 2008 elaborated three scenarios, including a counterfactual situation (i.e., no new measures were undertaken and the measures that were already undertaken were continued), on the basis of which the Commission elaborated the proposal for the Regulation on the creation of a network for competitive freight. However, for a number of reasons, the baseline defined at the time of the preparatory impact assessment was not relevant for this evaluation study.

Firstly, substantial differences exist between the proposal for the Regulation of 2008 and the final version that entered into force in 2010, while the nine rail freight corridors established by the Regulation have significantly broadened the scope of the provisions compared to the six corridors that were assumed in the preparatory impact assessment.

Second, a number of initiatives and measures aimed at improving the competitiveness of rail freight transport were implemented after the adoption of the Regulation in 2010, both at the European level and Member State levels.

At the European level, the most important initiatives introduced are (i) the Single European Railway Area Directive 2012/34/EU, (ii) Regulation (EU) No 1315/2013 on Union guidelines for the development of the trans-European Transport Network, and the Connecting Europe Facility Regulation (EU) No 1316/2013, (iii) Implementing Regulation 2015/429 setting out the modalities to be followed for the application of the charging for the cost of noise effects, (iv) the Railway Interoperability Directive (EU) 2016/797 and (v) the legislative acts included in the Fourth Railway Package. At the national level, a number of comparable measures for rail freight were undertaken focusing on (i) high-quality capacity for rail freight trains, (ii) traffic management (i.e., priority, reliability and punctuality) and (iii) optimisation of the coordination of infrastructure works.

Third, the comparison of the assumptions of the preparatory study of 2008[26] and the Commission's EU Reference Scenario of 2016 with the data observed after the establishment of the freight corridors shows that the forecast and observed average annual growth rates of rail freight transport activity are significantly different. In this respect, it is interesting to note that the forecast and actual annual growth rates of the volume of international rail freight are significantly different (i.e., 3.0% against 0.9%), even though the forecast and observed annual growth rates of gross domestic product at the EU27 level are closer (i.e., 3.3% against 2.5%). This shows that the impact of actual economic growth on international rail freight is not as initially envisaged.

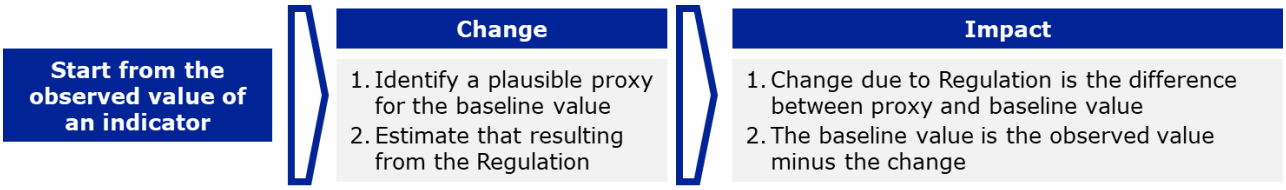
4.2. Methodological approach

The aspects presented previously show that the changes that might be ascribable to the implementation of the Regulation can be neither clearly isolated from the implementation of other legislative acts nor from other observed trends.

Therefore, the baseline is defined on a case-by-case basis, as follows. Starting from the observed trend of an indicator, changes are (1) identified as a plausible proxy for the baseline value, or (2) estimated as having resulted from the Regulation. The impact on the initial indicator is estimated as (1) the difference between the proxy and the baseline value, or (2) as the observed value minus the change (see Figure 2).

The indicators used to estimate the changes and the impacts were selected from among the key performance indicators used for the evaluation study. The key performance indicators were selected considering the trends in the years before and after the establishment of the freight corridors and comparing the quality of the rail freight services running on pre-arranged train paths, or other paths, on designated lines of the freight corridors[27].

Figure 2: Methodological approach to define an evaluation baseline



Source: elaboration of the authors

[26] PWC and NEA (2008). Preparatory study for the impact assessment for a rail network giving priority to freight, Report for the European Commission Directorate General Energy and Transport, Final Report, November 11th, 2008.

[27] The key performance indicators used to develop the evaluation baseline are: the punctuality at entry point of the freight corridor (i.e., KPI II.8), the punctuality at exit point of the freight corridor (i.e., KPI II.9), the commercial speed of freight trains (i.e., KPI II.11), the typical dwelling time of freight trains at freight corridors border crossing (i.e., KPI II.15) and the number of international freight trains by railway line of the European rail network (i.e., KPI III.1). See also section G3 of the technical annexes.

4.3. Data sources

The data to estimate the changes and impacts of the selected key performance indicators were gathered from (i) desk and field research activities and (ii) the dataset made available by RailNetEurope for the purpose of this analysis.

The desk research was based on (i) the documents produced at the freight corridor level, (ii) the publications of RailNetEurope on commonly applicable rail freight corridor key performance indicators and (iii) some statistics on rail freight transport from Eurostat's database.

The field research informed the evaluation baseline with (i) the information gathered from tailored questions included in the survey questionnaire and (ii) the opinions expressed by relevant stakeholders during the targeted interviews. Both sources provided valuable input to elicit the view of the concerned stakeholders, validate the knowledge accumulated by the desk research and complement the evaluation with further qualitative elements.

The dataset made available by RailNetEurope contributed to the evaluation baseline with information on the performance of international freight trains, distinguished according to trains running on pre-arranged paths and on other paths. The dataset consists of a sample of runs of four freight corridors in 2019, selected by the train performance manager experts of the corridors concerned.

The data gathered from the abovementioned sources have the following limitations:

- First, the data of the annual number of international freight trains are heterogeneous between the freight corridors. Different datasets provide the information, either as the number of trains observed at border crossing sections, or as the total number of trains on the freight corridor.
- Second, the documents at the freight corridor level and the publications of RailNetEurope on the commonly applicable key performance indicators provide observed data for 2018 and 2019 and planned values for the timetables of 2020 and 2021. Only the North Sea-Mediterranean freight corridor provides a longer time period for the commercial speed and average punctuality of freight trains running on pre-arranged train paths, as it covers the years since 2013.
- Third, the documents reviewed do not provide data that enable the comparison of the performance of trains running on pre-arranged train paths and those on other paths. This information is contained only in the dataset released by RailNetEurope for four freight corridors and for one year (i.e., 2019). These data allow the comparison of the two types of path with respect to punctuality, commercial speed and journey time.
- Neither the desk research nor the dataset of RailNetEurope contained data regarding the typical waiting time at border crossings. An analysis based on this indicator could only be developed on the basis of the responses to the survey questionnaire.

4.4. Data analysis

The estimation of the impact on the number of international freight trains can be developed taking into account the differences in the performance of rail freight trains running on pre-arranged paths and on other paths.

The information in the dataset provided by RailNetEurope, complemented by additional information extracted from Eurostat's database, allows for the elaboration of estimates for the trends of international freight trains that run on the Rhine-Alpine, North Sea-Mediterranean and Czech-Slovak/Rhine-Danube freight corridors.

For the other freight corridors, the data available do not allow the elaboration of this trend because the datasets available are inconsistent between different sources. In particular, Eurostat's figures for the number of freight trains for the years before the establishment of the freight corridors significantly differ from the data of RailNetEurope for the years after they were established[28].

The analysis of the difference in the performance of freight trains running on pre-arranged paths and other paths is based on RailNetEurope's sample of more than 11,000 paths recorded in 2019. The main findings stemming from this data analysis are as follows:

- In terms of journey time, the freight trains running on pre-arranged train paths generally perform better than those running on other paths. However, the performance is better at the planning stage compared to the actual observed performance (i.e., 6.7% against 1.5%).
- As regards punctuality, while the share of freight trains departing at the point of origin within 15- and 30-minute thresholds are comparable for both pre-arranged and other paths, the share of freight trains arriving within the same thresholds is found to be higher for the freight trains running on other paths (i.e., 6.5%).
- With regard to commercial speed, freight trains running on pre-arranged train paths perform better. As was found for the journey time, the average commercial speed is higher at the planning stage and less for the actual observed data (i.e., 9.7% against 3.5%).

4.5. Field research analysis

The field research provides elements to inform the evaluation baseline, particularly from the analysis of the responses gathered from the stakeholder consultation.

Responses to the tailored multiple-choice questions reflect the opinion of the various stakeholder groups on the impact of the freight corridors on the performance of freight trains with respect to commercial speed, punctuality and dwelling time at border crossings, as well as on the planning and operating costs of rail freight services. The overall view was that, since their establishment, the freight corridors did not produce a significant variation to any performance indicators.

In particular, the stakeholders felt that the measures taken with regard to freight corridors have influenced the performance of international rail freight trains only to a small extent or not at all in terms of punctuality, dwelling time at border crossings, and planning and operating costs. A mixed view emerged in relation to the impact on commercial speed. It is important to also note that the measures taken outside of the scope of the Regulation were assessed as having influenced international freight trains to a moderate or large extent for all performance indicators other than punctuality.

Responses to the open questions led to other qualitative elements being added when defining the baseline, in order to broaden the view with respect to the situation that would have existed without the Regulation being adopted.

The management boards consider that the governance structure set up by the Regulation is the first organisation that enables an international approach to capacity allocation and traffic management and thus goes beyond the structures in place at the national level. In

[28] See also Annex G.4. In particular, Table G.5 shows the data gathered by freight corridor distinguishing if it represents the total number of trains that run on the freight corridor, or the number of trains at cross border sections of the freight corridor.

general, the Regulation has allowed for the improvement of the coordination of international capacity allocation processes and infrastructure works. In addition, the Regulation enabled the creation of a network of relationships and sound cooperation between infrastructure managers on different levels (i.e., strategic, technical and operational). The transparency of the information provided to stakeholders has improved and a fairer treatment of operators has been made possible.

The infrastructure managers suggested that there had been improvements in market knowledge and enhancements to the international harmonisation of procedures. A mutual exchange of experiences and best practice, based on the implementation of pilot projects, the development of common practices, the sharing of positive and negative experiences and the facilitation of cross-border operations, are considered to be other strong points that otherwise would have not been possible.

4.6. Estimation of the baseline value

Considering the observed trends with regard to international freight trains elaborated for three freight corridors and the difference between the commercial speed of trains running on pre-arranged train paths and on other paths, a baseline value for international freight trains was estimated, comprising the observed value minus the impact stemming from the difference in performance.

The estimation of the impact related to the difference in commercial speed was developed through the application of elasticity estimates as set out in the literature (Jourquin and Beuthe (2019); TRT et al., (2018)). As noted in the preliminary analysis, some elements suggest that the positive trend observed for the international intermodal rail transport segment might be linked to the implementation of the Regulation. On this basis, an elasticity estimate with respect to travel time for intermodal cargo of -0.63 was selected from the values identified in the literature review. As an observed reduction of travel time corresponds to an increase of commercial speed, it is assumed that a certain percentage reduction of the travel time resulting from using the pre-arranged train paths, compared to the other paths, could correspond to an equal percentage variation of the commercial speed (but with an opposite sign).

According to the definition of elasticity, the number of international freight trains in the absence of the Regulation can be estimated as follows.

$$\frac{\Delta total\ trains}{total\ trains_{observed}} = \left(1 - e \cdot s \cdot \frac{\Delta_{commercial\ speed}}{commercial\ speed_{PaP}}\right)$$

Where:

- $\frac{\Delta total\ trains}{total\ trains_{observed}}$ is the percentage variation of international freight trains between the observed situation and the evaluation baseline;
- e is the elasticity value identified from the literature (i.e., -0.63);
- s is the share of capacity allocated by the corridor one-stop shop with respect to the total allocated capacity (see KPI II.3); and
- $\frac{\Delta_{commercial\ speed}}{commercial\ speed_{PaP}}$ is the percentage performance difference of the commercial speed between international rail freight services running on other paths and those running on pre-arranged train paths.

The tables below show that the estimated impact that can be attributed to the difference in commercial speeds between trains running on pre-arranged paths and on other paths is rather small and ranges between 0.1% for the Rhine-Alpine freight corridor and 3.3% for the Czech-Slovak/Rhine-Danube freight corridor.

Table 3: Estimated baseline of the Rhine - Alpine freight corridor

Indicator	2010	2011	2012	2013	2014	2015	2016	2017	2018
Actual (trains/year)	89,344	94,192	91,041	96,705	99,136	99,045	99,842	101,250	102,659
Baseline (trains/year)				96,705	*99,068*	*98,976*	*99,773*	*101,180*	*102,588*
Percentage difference of the commercial speed between other paths and pre-arranged train paths								- 0.5%	
Capacity allocated by the C-OSS with respect to the total allocated capacity								21.4%	
Percentage variation for international freight trains between the observed situation and the evaluation baseline (2013-2018)								+0.1%	

Source: elaborations of the authors based on RailNetEurope data

Table 4: Estimated baseline of the North Sea - Mediterranean freight corridor

Indicator	2010	2011	2012	2013	2014	2015	2016	2017	2018
Actual (trains/year)	22,227	28,874	27,053	31,711	32,200	33,621	35,538	43,316	39,044
Baseline (trains/year)					32,200	33,268	35,264	42,660	38,331
Percentage difference of the commercial speed between other paths and pre-arranged train paths								-5.4% / -9.4%	
Capacity allocated by the C-OSS with respect to the total allocated capacity								41%	
Percentage variation for international freight trains between the observed situation and the evaluation baseline (2014-2018)								+2.5% (maximum)	

Source: elaborations of the authors based on RailNetEurope data

Table 5: Estimated baseline of the Czech-Slovak/Rhine-Danube freight corridor

Indicator	2010	2011	2012	2013	2014	2015	2016	2017	2018
Actual (trains/year)				14,707	14,904	15,471	15,173	15,187	16,790
Baseline (trains/year)				14,707	14,434	14,983	14,694	14,708	16,260
Percentage difference of the commercial speed between other paths and pre-arranged train paths								-12.9%	
Capacity allocated by the C-OSS with respect to the total allocated capacity								38.9%	
Percentage variation for international freight trains between the observed situation and the evaluation baseline (2014-2018)								+3.3%	

Source: elaborations of the authors based on RailNetEurope data

Despite a lack of data, which did not allow for the identification of a consistent trend of the number of freight trains before and after the implementation of the Regulation, it can be assumed that the effect of the Regulation could be of the same order of magnitude for the other freight corridors.

However, this result must be viewed with caution because, as demonstrated by the data elaborated for the three corridors, the performances of the pre-arranged paths are not regularly and significantly stronger compared to the other paths.

In this respect, a similar approach might be developed taking into account performance in terms of punctuality. However, according to the values extracted for this indicator, freight trains running on pre-arranged train paths perform worse than those running on other paths. The elaboration would lead to a reduction of freight trains compared to the baseline situation. This is not a likely situation, but it does indicate that the positive effect calculated on the basis of journey time/commercial speed must be viewed with caution.

5. ANSWERS TO THE EVALUATION QUESTIONS

5.1. Relevance

The Better Regulation Guidelines, Chapter VI, require with respect to the questions on relevance: "The evaluation must look at the objectives of the EU intervention being evaluated and see how well they (still) match the (current) needs and problems. The answer to this question should identify if there is any mismatch between the objectives of the intervention and the (current) needs or problems." Analysing potential mismatches on the base of quantitative data requires the use of indicators in the same way that they are employed for the evaluation of the "effectiveness" questions. In the following sections on Evaluation Questions 1-4 ("Relevance") cross references are made to the evaluation questions 5-10 ("Effectiveness") where appropriate.

5.1.1. EQ 1: To what extent are the objectives of the Regulation (still) relevant to address the current problems and needs of European freight transport and what new elements can be identified since the adoption of the Regulation?

Introduction

The recitals (3, 10 and 27) of the Regulation mention the general objective of establishing a European network for competitive rail freight made up of freight corridors to improve the market competitiveness of rail freight transport. The terms of reference specify this overarching goal by referring to general and specific objectives accordingly (see the detailed elaboration in Annex I and the updated intervention logic in Annex A). This evaluation question required an analysis of the objectives associated with past problems and needs which gave rise to the intervention and a comparison of these with the problems and needs as they have developed over time and as they currently exist.

A detailed presentation of the main findings by sub-question is provided in Annex I[29].

Main findings

In the past three decades, the revival of European railways has been a permanent challenge addressed in the EU White Papers on Common Transport Policy from 1992, 1996, 2001 and 2011. The White Papers have stimulated the development of guidelines for Trans-European Networks (1996; 2004; 2013)[30]. In parallel, it was recognised that physical network improvements would take a long time and that it was necessary to improve the use of network capacities as well. Rail freight transport suffered in particular from low prioritisation and low-quality capacity allocations for international transport so that this important European transport segment was not able to develop its potential. One of the reasons was the fragmented system of capacity allocation by the different national infrastructure managers which needed cross-border coordination. Accordingly, the general objectives of the Regulation[31] are improving cooperation, giving priority to rail freight traffic, simplifying the use of infrastructure and strengthening the integration of rail freight in multimodal transport.

[29] See section I.1.1.

[30] As required in the Maastricht Treaty, Article 129.

[31] General and specific objectives as defined in the terms of reference.

The specific objectives are defined as:

- Improving the coordination between infrastructure managers and all other parties involved.
- Coordinating and planning investments and meeting the needs of interoperability.
- Improving operational conditions for international rail freight services.
- Guaranteeing access to adequate infrastructure capacity to international freight trains.
- Facilitating the use of rail infrastructure for international rail freight services.
- Improving intermodality along the corridors.

All of the specific objectives are deemed as still being relevant to a large extent by the majority of stakeholders who expressed their view within the stakeholder consultation as well as through the open public consultation. In particular, the stakeholders state that specific objectives with respect to coordination issues should be extended and further specified. On the other hand, several stakeholders (and freight corridor boards) felt that the list of objectives is overloaded insofar as it includes some strategic objectives which cannot be achieved by the actions of the freight corridor boards. For details see Annex I.

As discussed in relation to effectiveness (see evaluation question 6 where the achievements in relation to all of the general, specific and operational objectives are discussed) the European rail freight sector still suffers from a poor quality of cross border services, limited priority to rail freight traffic and a general lack of competitiveness.

The key barriers to increasing the competitiveness and market share of rail freight, according to the consultations conducted, are still to be found in the lack of price competitiveness, the lack of quality of rail freight transport services (in particular their punctuality, predictability and flexibility), their lack of flexibility in meeting shippers' needs, interoperability barriers for rail and the lack of a level playing field between different transport modes (e.g., lack of consistent application of 'polluter pays' and 'user pays' principles).

The objectives of the Regulation are intended to tackle some of these problems, and are therefore still highly relevant.

Conflicting views as to their relevance emerge when discussing the instruments for their achievement. First, it can be questioned whether some of these specific objectives are more specifically addressed by other existing policies so that their integration into the Regulation implies unnecessary duplication. And secondly, it can be questioned whether the specific objectives are addressed in the best way by the instruments of the Regulation. These aspects are covered in evaluation questions 3 and 4 and in those on effectiveness. The extended response to this question in Annex I gives more details and shows the results from the stakeholder surveys, interviews and position papers.

While the objectives of the Regulation, that aim in their general formulation at the substantial improvement of European rail freight, can be seen as being consistent over time, some new elements have emerged with respect to the scale and scope of the rail freight corridors.

First of all, it emerged that important overhead tasks which apply to all freight corridors cannot efficiently be handled by a single stand-alone freight corridor decision-making body. The establishment of an informal Network of Executive Boards is a very good example of this. The related institutions (namely the executive boards) felt the need to establish (and established) informal network-wide organisations (the network of the executive boards). In addition, an established cooperation between neighbouring or overlapping corridors, not

explicitly foreseen by the Regulation (e.g., Rhine - Alpine and North Sea - Mediterranean, or Orient/East-Med and North Sea – Baltic freight corridors), shows that problems and needs occur beyond the corridor level and require a more comprehensive approach.

With regard to operations, the work of the management boards concerning the management and operation is indeed assisted by a variety of cross-corridor initiatives taken by RailNetEurope, which develops harmonised solutions for all freight corridors and at the network level. It is worth mentioning that RailNetworkEurope is also an active member of the Platform of Rail Infrastructure Managers in Europe, which is the platform established in 2013 by the Commission and infrastructure managers to improve the cooperation of rail infrastructure managers across borders and network-wide. Second, although the user side (i.e., railway undertakings, terminal operators, shippers and forwarders) was allocated only a moderate advisory role by the Regulation, some freight corridors started regularly inviting the respective advisory groups to board meetings and to participate in working groups (e.g., Rhine Alpine and North Sea – Mediterranean freight corridors). Others started pilot projects with terminal operators to better integrate terminals into capacity allocation planning (e.g., Scandinavian – Mediterranean freight corridor). This highlights that the instruments to achieve the specific objectives were not interpreted in a static way but rather that they were adjusted to the developing needs.

Conclusions

The relevance of the general objectives of the Regulation has not changed over time. This also holds true for the specific objectives in their general wording. However, as soon as the specific objectives are linked to the instruments set up for their achievement, i.e. the provisions of the Regulation, they have to be checked further with respect to their relevance (in evaluation questions 3 and 4) as well as (in evaluation questions 6 and 9) with respect to their effectiveness.

Furthermore, the specific objectives are not substantiated by concrete targets, which makes the monitoring of their achievement difficult. New elements are emerging beyond the Regulation, for instance the growing network orientation of the freight corridors boards and the involvement of the user side when preparing board decisions, which indicate that the instruments to achieve the specific objectives might need to be readjusted periodically.

Table 6: Summary – Relevance of general and specific objectives

Objectives	Relevance for current problems and needs	New elements
General	Still relevant	-
Specific	Relevant with respect to their general wording Strategic objectives will have to be checked with respect to their potential better achievement through other policy mechanisms Management objectives are not specific enough to enable concrete target setting and monitoring	Extension of the corridor to the network level to carry out superordinate tasks (i.e., Network of Executive Board; RailNetEurope activity) and for closer integration of advisory groups into the work of freight corridors' boards

Source: compilation of the authors

5.1.2. EQ 2: To what extent do the objectives of the Regulation (still) contribute to the goals of transport policy and to that of related policies (e.g. climate change, economic policy)?

Introduction

The major goals of transport policy were formulated in the White Paper on Common Transport Policy (2011), in particular in relation to achieving drastic reductions of GHG emissions (60% for the transport sector for 2050 compared with 1990), decreasing the oil dependency of transport-related activities and increasing transport efficiency (reduction of congestion).

Ten specific targets were defined including a very ambitious modal shift target (e.g., shifting 30% of road freight transport with distances of more than 300 km to rail/inland waterways by 2030, and 50% by 2050). Climate policy targets, as well as targets for the future development of industries, were specified with even more challenging targets in the recently adopted European Green Deal Initiative of the Commission (COM (2019) 640 final). This presents a comprehensive environmental and economic strategy and includes transport and mobility as one of eight specific target areas.[32]

A detailed presentation of the main findings by sub-question is provided in Annex I[33].

Main findings

The Regulation is in keeping with the goals of transport policy and related environmental and economic policies, as laid down in the White Paper (2011) and the Green Deal (2019). Its contribution lies in the attempt to improve the modal share of rail freight transport by improving the quality and the coordination of the infrastructure capacity allocated to international rail freight transport. Diverting freight from road to rail should lead to a reduction of GHG emissions and modal shift goals are widely supported by all stakeholders consulted.

The contribution of the objectives of the Regulation to transport policy is highlighted by ministerial declarations, as presented in Rotterdam, Vienna and Leipzig, in which the EU Ministers for Transport explicitly document their support for increasing the competitiveness of rail freight transport. In the Rotterdam Declaration (2016), Ministers announced the intention to regularly monitor the effects of the declaration to boost international rail freight traffic in Europe. The objectives of the Regulation are also widely accepted by users, as documented by the Sector Statements (2016, 2018) which underline the willingness of stakeholders to actively contribute to the implementation of the Regulation (see the list of ten priorities reported in the Sector Statement, 2018).

The extent to which the Regulation can contribute – as a partial stand-alone instrument – to the goals of transport and environmental policy, however, seems to be very moderate. Rail freight transport in the EU accounts for 11.3% (16.5% of land transport without sea and air transport) of total freight transport (2017), declining from 11.8% (17.4%) in

[32] The communications of the Commission on green mobility published before the Green Deal are not discussed here because the Green Deal tightened the targets and extended the scope of measures.

[33] See section I.1.2.

2013[34]. The volume transported by international rail is about 50%[35] of the total rail freight volume, which results in an international freight market share of total freight transport in the order of magnitude of 8.3%, in terms of tonne-km.

From this small share, the Regulation can only directly influence the efficiency of infrastructure capacity use, which is one of a number of changes necessary to achieve a significant upturn of rail freight modal share (others include capacity development, control and vehicle technology and logistics including terminals/modal interchange, as well as demand-side policy such as the internalisation of external costs or strict environmental/safety regulations for the competing road haulage industry). The analysis of relevant performance indicators for operation (e.g., punctuality/reliability, average speed) and market development (e.g., modal split declined by almost 1% since the introduction of the freight corridors in 2013) indicates that the Regulation did not deliver the expected impact on their improvement. Hence, the Regulation did not significantly contribute to the goals of transport, economic and environmental policy.

Further details are given in Annex I and in Annex E on transport market statistics, differentiated by freight corridor.

Conclusions

The Regulation provides tools for improving the competitiveness of railways, which means that, in principle, it is able to contribute to delivering the main aims of EU common transport policy. However, this contribution is very limited compared with the ambitious targets of EU transport and climate policy, e.g. the White Paper (2011) or the Green Deal (2019). The low competitiveness of railways has not significantly been improved by this contribution over time (see indicators on market performance, Annex E).

Table 7: Summary – Contributions to transport and other related policies

Objective	Contributions to transport policy	Contributions to related policies
Improvement of the competitiveness of rail freight transport	Intended impacts in the right directions	Intended impacts in the right directions
Modal shift and GHG emission reduction	Intended impact in the right direction, but contribution very limited; the Regulation addresses a small part of the transport market; only relevant if integrated into an ambitious policy package on sustainable transport	Very limited; only relevant if integrated into an ambitious policy package on climate and environmental protection

Source: compilation of the authors

[34] European Commission: Statistical Pocket Book EU Transport in Figures, 2019.

[35] See European Commission: Sixth Report on Rail Market Monitoring (RMMS), 2019.

5.1.3. EQ 3: Are the scope, the areas of intervention and the measures provided in the Regulation appropriate to address the problems and needs of European rail freight transport and to reach the objectives of the Regulation?

Introduction

This evaluation question refers to the appropriateness of the general design of the provisions of the Regulation to achieve its general and specific objectives. This requires an analysis of the scoping and general design of the intervention measures on the following areas:

- Scoping of the freight corridors in terms of the assignment of competences to the freight corridors' institutions;
- Areas of intervention and measures classified in the Regulation.

The analysis for evaluation question 3 prepares the basis for other evaluation questions which go into the details of the intervention instruments (e.g., evaluation question 4 and on effectiveness). A detailed presentation of the main findings by sub-question is provided in Annex I[36].

Main findings

Scoping of the freight corridors (Article 8): The purpose and scope of the Regulation, as defined in Chapter I, Article 1 (1) and (2), are to lay down rules for the establishment and organisation of international rail corridors for competitive rail freight aiming at the development of a European rail network and to set out rules for the selection, organisation, management and the indicative investment planning of freight corridors.

As per the Regulation, the executive and the management boards of the freight corridors are the governance bodies with decision-making competence. Furthermore, the Regulation requires the establishment of advisory groups consisting of railway undertakings and terminal managers and owners.

The tasks of the executive boards consist of:

1. Defining general objectives;
2. Supervising the work of the management board and of the freight corridor in general;
3. Acting as an intermediary in case of disagreements between the management board and the advisory group of managers and owners of the terminals;
4. Approving the implementation plan for the freight corridor;
5. Approving the investment plan for the freight corridor (including an interoperability deployment plan);
6. Defining the framework for the allocation of infrastructure capacity on the freight corridor;
7. Producing biennial reports to the Commission on the results of the implementation plan of the freight corridor (Article 22 report).

While the first four points describe the usual tasks of a supervisory board, points (5) and (6) list strategic tasks which require an analysis of the extent to which the executive boards are able to fulfil these tasks according to the objectives of the Regulation.

[36] See section I.1.3.

The development and updating of frameworks for capacity allocation (Article 14 (1)) is a task which aims at providing common rules for all freight corridors. So far, it has largely been an overhead task, and this was acknowledged when the harmonisation processes were started in 2015 and the platform for the framework for capacity allocation processing was established in the form of the (informal) Network of Executive Boards.

Including investment planning and deployment plans in the scope of executive tasks according to Article 11 leads to overlapping responsibilities of the freight corridors bodies with those of the core network coordinators and national ministries. Article 48 of the TEN-T Regulation (EU) 1315/2013 requires an adequate coordination between the core network corridors and the freight corridors in order to avoid any duplication of activity.

The core network corridors' workplans require – ignoring the requirements on other modes of transport – the establishment of comprehensive investment plans for rail passenger and freight transport. As most railway projects – except for high-speed rail – are designed for mixed traffic, it is obvious that the final coordination work of Article 48 has to be done by the core network corridor bodies. The freight corridors should contribute by indicating their needs for freight infrastructure improvements, e.g. the removal of major bottlenecks, in order to influence the appropriate design of investment projects. This means that the requirement imposed by the Regulation for the freight corridors bodies to set up indicative investment plans and plans for the deployment of interoperability (including the European Rail Traffic Management System), including cost-benefit analyses and sources of finance, overlaps with the tasks of the core network corridor bodies and will result in a duplication of work if Article 11 of the Regulation is followed to the letter.[37]

The tasks of the management boards are defined as:

1. Coordinating the management of the freight corridors using all of the instruments provided in Chapter IV, including all information instruments.
2. Consulting applicants (Article 10).)
3. Implementing the freight corridor plan and reviewing the implementation plan (Article 9(1)).
4. Setting up advisory groups for railway undertakings and terminal managers and owners (Article 8 (7,8))
5. Coordinating the use of interoperable IT applications (Article 8(9)).
6. Carrying out and periodically updating a transport market study (Article 9(3)).
7. Drawing up and periodically updating a medium and long-term investment plan (Article 11(1)).
8. Drawing up a deployment plan relating to interoperable systems based on a cost-benefit analysis (Article 11(1b)).

Tasks (1) to (4) include aspects of management as they have to be fulfilled in railway systems where a sequence of coordination activities is necessary to guide a freight train from its origin to destination through different country networks which have different characteristics in terms of infrastructure, superstructure and organisation. This is the main difference to the competing road freight transport sector which can be organised door to door by one agent, a shipper or forwarder, and moved by standardised vehicles without border stops. Therefore, there is wide agreement that the areas addressed by (1)-(4) are necessary elements of a regulation on the coordination of rail freight management. The

[37] Which is not done by most freight corridors, see the extended version of evaluation question 3 in Annex I.

main question is whether the instruments for achieving this coordination are designed in an appropriate way. This is analysed in the EQ sections on effectiveness.

Tasks (5) and (6) are also necessary elements of rail infrastructure management. However, these need tools at the network level to preserve the consistency of data. The reason is that the corridor data of different freight corridors can overlap and does not reveal whether they relate to origins and destinations, origins or destinations or transit flows on the corridor. Accordingly, the corridor perspective of the Regulation has to be extended to the network level, which is increasingly implemented by RailNetEurope.

Tasks (7) and (8) cannot be fulfilled by the small freight corridor management boards and these overlap with the tasks of the core network corridor coordinators. The provisions of the freight corridors and core network corridors regulations do not clarify the responsibilities for executive and management boards for strategic issues in enough detail.

Areas of intervention and measures in the Regulation: The areas of intervention for the current management of capacity allocations are defined in Chapter IV, Articles 13-22 of the Regulation. This is the core of the Regulation and consists of corridor one-stop shops, pre-arranged path allocation, reserve capacity and provisions for traffic management in the case of capacity restrictions. The fulfilment of management tasks is not possible without information systems containing data on current capacity use, and the monitoring of train movements, which are provided by RailNetEurope.

Furthermore, the Regulation requires the preparation of information on the conditions of use of the corridor (Article 19). A number of reports have to be prepared by the freight corridors (i.e., annual reports, biennial reports, transport market studies, implementation plans and investment plans), which provide information on activities and achievements. The information systems provide the necessary basis for capacity management systems so that their usefulness is not questioned. Problems can be identified with the quality and user friendliness of the information systems prepared by RailNetEurope, which are analysed in evaluation question 5.

The success of the interventions for improving the allocation of capacity is documented in RailNetEurope statistics on performance indicators (see the evaluation questions on effectiveness) and market development (see Annex E). Figures show that the use of the corridor one-stop shop is far below expectations; the potential presumed by the Commission has not yet been tapped into. The pre-arranged paths are increasingly requested, in particular flexible or late pre-arranged paths, but they constitute only a small percentage (less than 10%) of the total paths allocated to international freight trains in the EU. The instrument of reserve capacity is rarely used (about 10% of the pre-arranged paths). Reasons for the low demand for the corridor one-stop shops and reserve capacity are given in Annex I (see evaluation questions 6 and 9) and the case studies.

The data on operations and market results (see Annex E on indicators and market development) raise doubts as to the appropriateness of the areas of intervention and the definition of the measures in the Regulation. On the one hand, the scoping of the Regulation appears to be too wide with respect to the strategic issues of investment planning, the European Rail Traffic Management System and interoperability. On the other hand, the measures for the coordination of capacity management are very specific, but appear not to be appropriately designed to address the current needs of rail freight transport and do not allow for flexible adjustment. Furthermore, the Regulation appears to be too narrow with respect to allocating overhead tasks to management improvement institutions at the network level (e.g., framework for capacity management and network information instruments).

The opinions of stakeholders (i.e., open public consultation of 2020, targeted interviews and position papers) are presented in the wide response to this EQ in Annex I. Case studies 1 and 2 and the indicators developed for the estimation of the baseline give figures on the effectiveness of path allocations by comparing pre-arranged paths with non-pre-arranged path allocations. Both sets of evidence show that the advantages deriving from the use of the instruments of the Regulation are perceived by the users as being marginal, either in terms of costs or in terms of the level of performance expected. Both factors suggest that the Regulation has had a very small contribution in addressing the stated problems and reaching the objectives.

Conclusions

The scope of the Regulation addresses the relevant areas for the coordination of international rail freight capacity management. On the one hand, it appears too wide with respect to strategic tasks such as investment, the European Rail Traffic Management System, or interoperability issues. On the other hand, it appears too narrow in terms of the specific design of measures and instruments for improving the coordination of capacity management which have not proven to be successful and do not allow for their flexible adjustment to market needs. The Regulation does not contain provisions for the treatment of overhead tasks such as preparing a framework for capacity allocation, solving problems with overlapping corridors or preparing network-wide information instruments.

Table 8: Summary – Findings for scoping and intervention areas/measures

Competence of the freight corridors bodies	Appropriateness for current problems and needs
Executive Boards: set correctly with respect to their supervisory role; insufficient with respect to network-wide harmonisation; duplicated for strategic tasks; unclear to what extent decisions are binding Management Boards: Set correctly with respect to management coordination (not with the design of instruments); overloaded with strategic tasks for which they are not competent	Role of the freight corridors' strategic issues not clear; overlapping with national investment planning and core network corridors strategic planning Measures defined in the Regulation for better coordination of train path allocations not effective for all freight corridors; large majority of paths for international freight trains in the EU not allocated by instruments of the Regulation

Source: compilation of the authors

5.1.4. EQ 4: How well suited are the provisions of the Regulation and do they provide for the appropriate tools to address the objectives, in light of the current and expected developments in trade, transport logistics, technology and public policy?

Introduction

The general aspects of the appropriateness of the tools have been addressed in evaluation question 3. Therefore, the analysis for evaluation question 4 focuses on the expected external developments and their impact for evaluating the relevance of the instruments of the Regulation. The current and expected developments are analysed with respect to trade (change of commodity structure), technology (vehicles, control and information technology), transport logistics (requirements for extending freight transport services by rail), public policy (environment, economics, infrastructure policy) and associated EU policy

(e.g., TEN-T Regulation). A detailed presentation of the main findings by sub-question is provided in Annex I[38].

Main findings

Development of trade and commodity structure: Freight transport in the EU increased by 10% between 2011 and 2017. However, while road freight transport grew, rail freight transport stagnated (422 billion tonne-km in 2011 and 421 billion tonne-km in 2017)[39]. The main reason was the decline of bulk cargo transport: for instance, the transport of coal and refined petrol decreased by 12%[40]. Conversely, positive development was observed for combined intermodal transport which increased from 19.1 to 22.5 million TEU[41] (an increase of 18%) between 2011 and 2017, which indicates the market segment (and related commodities) that could drive the desired improvement in the market position of rail freight. Forecast studies show that commodity groups with a high rail affinity in the past will continue to decline while groups with (formerly) a low rail affinity are growing.[42]

Technology of railways and other transportation modes: The main technological change in the railway sector before 2030 will probably be the transition to a common operation control system, the ERTMS, which should be achieved by 2030 on the core network corridors. The standard specification is the European Train Control System level 2 (i.e., baseline 3; release 2). Following this specification, track-side control is partly substituted by a radio-based system that sends data from the locomotives to radio block centres, while Eurobalises, installed in the tracks, are used as passive positioning beacons. The resulting capacity increase depends on the technical standard of the previously applied control system and varies between 10% and 30% (see 3rd Workplan of the European Rail Traffic Management System Coordinator, 2018). It has not yet been decided whether further development towards European Train Control System level 3, which would allow for the individual control of vehicles on the track and their automatic coupling outside of shunting yards, will go ahead, either for the necessary standards or for pilot applications.

An update of the Rhine – Alpine freight corridor transport market study in 2018 estimated the impacts of conventional technology improvements leading to longer, heavier, faster and more reliable freight train services for intermodal, general, dry bulk and wet bulk cargo transport. The "ex post" forecasting approach[43] concluded that, depending on the combinations of these performance measures, an increase of modal share could be achieved in an order of magnitude of up to 5.5%. Intermodal transport could benefit most, which is remarkable insofar as this is the only growing market segment for rail freight transport and underlines that the change of commodity structure will also lead to a change

[38] See section I.1.4.

[39] Eurostat data; aggregate tables and figures can be found in: UIC/ETF, 2019: 2018 Report on Combined Transport in Europe. Paris. SCI, 2019: European Rail Freight Market 2019, Hamburg.

[40] For coal producing countries such as Czech Republic or Poland, the decline is much more dramatic, see the Czech Republic position paper.

[41] TEU stands for Twenty-foot equivalent unit.

[42] Rail Freight Forward, 2016: 30 by 2030. Rail Freight Strategy to Boost Modal Shift. See also Task 8, Annex C.

[43] Introducing the scenario measures into the state of the world of a past year, in this case 2015.

in the importance of performance criteria. Punctuality and reliability are the most important criteria for the modal choice of shippers with respect to combined transport. In Annex E, further examples of the preferences of shippers and forwarders for different performance criteria are indicated.

Automation is being tested for closed systems, e.g. in public transport and for marshalling operations, while automated rail operations in open systems is only on the research agenda of industry, universities and research centres. For road transport, the development of automatic truck driving will most probably reach levels 3 and partly 4[44], which will reduce the cost associated with drivers and increase reliability, together with the already widely developed systems for tracking and tracing. The introduction of the latter systems for rail freight is still in an early phase[45], in particular for international transport.

The automation of freight train drives will bring less in the way of productivity gains on route compared with the automation of trucks, because fewer drivers are used for freight trains per tonne moved. However, improvements to many processes, such as container handling at terminals, wagon moving and coupling at shunting yards, and changes of drivers at border crossings, would yield high productivity gains. The order of magnitude of such gains is estimated in various projects such as New Opera, Spider or Freightvisions. Many technology scenarios conclude that the modal share of rail freight could be doubled ("30 by 2030", see footnote 34). The numbers provided in such scenarios should be interpreted with caution because it is often assumed that technical progress only favours the railway system while road transport costs go up because of the internalisation of external costs and tighter social regulation.

***Logistics requirements**:* The logistics industry has adjusted to the market needs of flexibility and individualisation of transport services and the miniaturisation of consignments by allocating dynamically growing segments to road transport. Studies – partly launched by the Commission[46] – highlight that there is a similar potential for railways, but tapping into this requires radical changes in the traditional organisation and technology used for rail cargo transport. Examples are:

- liner trains with fixed timetables for container transport for synchronised services for freight hubs;
- automated wagon-group operations from origin to shunting yard;
- automated handling of small consignments down to pallet size; and
- use of high-speed trains for parcel services between hubs, e.g. airports.

The rail freight system has a host of technological and organisational options for improvement. This is investigated in the freight part of the Shift2Rail project which will be discussed in EQ 16. A main barrier is in the path dependency of industrial innovation, i.e. most large industrial suppliers prefer to invest in road transport technology because this provides a much larger market.

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[44] Level 3: Conditional automation, control of driver still necessary. Level 4: Vehicle able to perform navigation without driver's assistance on parts of the network (motorways, access to terminals/freight centres).

[45] An example is the Track&Trace function in the link-to-rail system of Deutsche Bahn AG, which requires an appropriate installation of sensors and GPS devices in freight cars.

[46] Examples are the projects New Opera, Freight Visions, Spider or Spider Plus.

Political orientations and changes of EU regulations: Political targets concerning the contributions of rail freight transport to EU economic and environmental policy have become more ambitious even compared with the White Paper of 2011. The European Green Deal (COM(2019) 640 final), published by the Commission, and several national initiatives on reducing greenhouse gas emissions have highlighted the issue of the revival of the railways. Rail freight has a considerable greenhouse gas advantage over road in the order of magnitude of a factor of 5 (German Umweltbundesamt)[47], which implies that one 740-metre long freight train would save the greenhouse gas emissions of about 52 trucks.

Three years after the approval of the Regulation, the TEN-T Regulation 1315/2013 and Connecting Europe Facility Regulation 1316/2013 were approved by the Parliament and the Council. The revised guidelines differ from the previous version of 2004 (Decision No 884/2004/EC) insofar as they develop the previous corridor concept further to a network concept consisting of two layers: the core and the comprehensive network. The core network corridors (comprising about two thirds of the core network) can be considered as a priority for concentrating investments in a coordinated way in the busiest geographical corridors so as to avoid a patchwork of uncoordinated investments. Other changes in EU legislation refer to the allocation of responsibility for European Rail Traffic Management System and interoperability as well as the allocation of infrastructure capacity (e.g., Recast Directive EU 2012/34, see evaluation question 15).

The findings with respect to the suitability of the provisions of the Regulation against the background of the above external changes are:

- The change of the market structure towards less bulk and more general cargo and combined transport has led to changed requirements in the logistics industry that were not met by rail freight. The Regulation does not contain provisions for the adjustment of capacity products to the changed market needs.
- There is a large potential for introducing new digital technology in the railway system because there is a wide field of applications for new communication, control systems and assistant systems. This requires a better integration of railway undertakings and terminal operators because the communication devices are increasingly installed in the vehicles and at freight hubs.
- The aim of increasing the modal share of rail freight transport also implies the need for new logistics concepts including the formation of freight hubs which are served by liner trains on the basis of fixed timetables. This requires a closer coordination of infrastructure managers with terminal operators and railway undertakings.
- The tools introduced by the Regulation (specifically the pre-arranged paths) were intended to improve the relevant performance indicators, such as punctuality and speed. As these have not improved since the implementation of the Regulation it might suggest that they were not suitable for reaching the targets or that they were not applied in the right way.
- RailNetEurope has developed information instruments (corridor information documents, path coordination system, train information system, charging information system, Handbook on International Contingency Management), which do not directly follow on from the provisions of the Regulation but which are a necessary precondition for the successful coordination of capacity allocation. The progress in the development of information systems is acknowledged by the stakeholders, as reported in consultations and interviews. However, stakeholders note that further development is still needed with respect to their completeness (including information for terminals, harmonisation; some infrastructure managers

[47] See https://www.umweltbundesamt.de/themen/verkehr-laerm/emissionsdaten#handbuch-fur-emissionsfaktoren-hbefa

still use their own path coordination tools), frequency of updating and user friendliness for railway undertakings.

- Additional policies have been introduced since the Regulation, raising questions about the allocation of responsibility to the freight corridors boards for strategic tasks (TEN-T Regulation), or for managing temporary capacity restrictions (see Recast Directive, Annex VII). A clear definition of the role of the freight corridors' bodies for strategic tasks would help to focus their activities on the coordination of capacity management.

Further details, referring to the freight corridors reports, the open public consultation and interviews, as well as case studies, are given in Annex G and in the evaluation questions on effectiveness.

Conclusions

Major external changes have occurred and are expected in the near future which, at least partially, could not be anticipated when the provisions of the Regulation were developed. The commodity structure has changed, together with the performance requirements of shippers and forwarders. Transport technology is changing towards the application of assistance systems and automation, but the industry has had no strong powerful incentives to invest in innovations in railway transport.

In this respect, the freight corridors' system has only partially adjusted to external changes by developing information technology at the network level (i.e., RailNetEurope), but this is still far from representing the technological state of the art. At the same time, the service institutions (i.e., corridor one-stop shop) and instruments (i.e., pre-arranged paths and reserve capacity) have not adjusted to the external changes of markets and technologies.

The following table summarises the main issues affecting the suitability of the provisions and of the tools introduced by the Regulation with respect to the development in technology and logistics and in trade and public policy. Provisions are clustered according to three of the main tasks foreseen: governance of the rail freight corridors, investment planning and capacity management (tools).

Table 9: Summary – Appropriateness of the provisions of the freight corridors in addressing current and expected developments in trade, transport logistics, technology and public policy

Provisions	Technology and logistics developments	Trade and public policy
Governance	Lack of freight corridors' provisions enabling adjustments to changes of the market, technology and logistics; no institutional organisation foreseen on the network level for evaluating changes in technology and logistics and their impacts on the needs of rail freight	Changes of market needs with respect to commodity structure not reflected in periodic adjustments of the freight corridors' provisions or guidance for their application; policy decisions (Green Deal) leading to a decrease in the transport of commodity groups traditionally transported by rail; challenges for transporting commodities for which rail has traditionally been less attractive require step changes in railway efficiency including capacity management
Investment	Infrastructure standards, ERTMS and interoperability are most	Rail revival as part of economic and environmental policy, long-distance

	important and treated comprehensively by the TEN-T Regulation and TEN-T Coordinators	road freight transport to be diverted to rail and inland waterway; challenges are evident but cannot be met by partial plans for rail freight projects. No clear role of the corridors' boards.
Management	Development of information instruments by RailNetEurope); technology and logistics issues go beyond corridor level. The Regulation is not stimulating the use of technological progress because of the fixed and static definition of capacity allocation instruments.	Innovations in rail control and trans-shipment technology can foster the development towards a green, carbon-free economy; Regulation can only contribute a small part of the desired impacts.

Source: compilation of the authors

5.2. Effectiveness

5.2.1. EQ.5: To what extent have the provisions of Regulation 913/2010 been implemented by Member States, infrastructure managers, regulatory bodies as well as managers and owners of the terminals and regulatory bodies? Is there a good balance between the content of the provisions of the Regulation and its ambitious objectives (e.g. one of the objectives is more priority for freight traffic; is the Regulation giving the right tools to achieve this objective)?

Introduction

The purpose of this evaluation question is twofold. First, it provides an overview of the progress made in implementing the provisions of the Regulation, including actions undertaken by infrastructure managers and regulatory bodies, as well as managers and owners of terminals. Second, it aims to assess the balance between the provisions and the key goals outlined in the objectives and in the headline targets.

Furthermore, the purpose of this evaluation question is to outline the overall state of play by describing the current situation, the factors that have hindered the implementation of the provisions, the most probable future developments of the implementation of the provisions with respect to the objectives in the mid- to long-term and the extent to which the Regulation is providing the right tools to achieve such objectives.

Answers to the question are presented with respect to the chapters of the Regulation regarding (i) the designation and governance of the international rail corridors for competitive freight, (ii) investment in the freight corridor and (iii) management of the freight corridor. Answers rely on the findings gathered from desk and field research, as well as the topical case studies. A detailed presentation of the main findings by sub-question is provided in Annex I[48].

[48] See section I.2.1.

Main findings

Designation and governance of the international rail corridors for competitive freight

Designation of the freight corridors

The nine initial freight corridors were designed according to Article 2(2a) and made operational in two steps after November 2013[49] in fulfilment of Article 3. Since then, the shape of the freight corridors network has been modified.

Two further freight corridors were established, the "Amber" freight corridor in 2017 and the "Alpine - Western Balkan" freight corridor in 2018. The Czech-Slovak freight corridor, freight corridor number 9, expired in 2020 to become the "Rhine - Danube" freight corridor. These freight corridors were established according to the criteria of Article 4 for further freight corridors.

Following the provisions of Article 6, the freight corridors that were initially designated have been subject to a number of modifications and this led to a lengthening of the freight corridor network to around 54 thousand km. Table 10 shows the modifications to the initial freight corridors.

[49] See the Annex of the Regulation.

Table 10: Modifications to the initial freight corridors

Freight corridor	Modification
North Sea-Mediterranean	• branches to Dunkirk, Calais and Paris (France) and Liège Montzen (Belgium) (January 2015) • branches to London (UK), Zeebrugge (Belgium), Amsterdam (the Netherlands) and Marseille (France) (January 2016) • branch to Geneva (March 2018) • extension beyond London to Mossend (November 2018)
Atlantic	• extension to Germany (2017) • branches to Valongo Terminal (Portugal), Zaragoza Terminal (Spain) and to the ports of La Rochelle and Nantes Saint Nazaire (France) (January 2018)
Mediterranean	• extension to Croatia (2016)
Orient/East-Med	• extension to Germany (2018) • extension to the Bulgarian-Turkish border and branch to Patras (Greece)
North Sea-Baltic	• branches connecting the ports of Amsterdam (the Netherlands), Hamburg and Wilhelmshaven (Germany) • extension to Prague (Czechia), via Bad Schandau (Germany) and to Katowice (Poland), via Horka (Czechia) • extension to Medyka (Poland-Ukraine border)[50] • further extensions to Riga (Latvia) and Tallinn (Estonia)[51] (preparatory steps for the extension to the Baltic States are in progress)

Source: compilation based on reports of the freight corridors

The established freight corridors provide opportunities to extend the network and ensure better interconnections with rail infrastructure of European third countries (see Article 4(g)). The freight corridors crossing the eastern European Member States are geographically better positioned to develop such interconnections and the review of their transport market studies identified a number of potential developments.

In particular, three freight corridors have considered developing extensions towards Turkey, two freight corridors evaluated connections with Serbia and one corridor the interconnection with Ukraine. Other interconnections were considered with other countries in the Western Balkans (i.e., Bosnia and Herzegovina, North Macedonia and Montenegro), while no measures involving Belorussia were envisaged. Table 11 presents the overview of the interconnections by freight corridor.

[50] The extension of the North Sea-Baltic freight corridor to the Polish-Ukrainian border at Medyka was confirmed by European Commission with Commission Implementing Decision (EU) 2020/2168 of 17 December 2020.

[51] The preparatory steps for the extension to the Baltic States have started in 2019. The working group of the freight corridor on "Legal Issues" elaborated the process of incorporation of Latvia and Estonia in the management board by the beginning of 2021.

Table 11: Overview of the interconnections with European third countries

Freight corridor	European third country
Mediterranean	Bosnia and Herzegovina and Serbia
Orient/East-Med	Turkey
Alpine-Western Balkan	Bosnia and Herzegovina, North Macedonia, Montenegro and Turkey
Amber	Serbia, Turkey and Ukraine

Source: compilation based on reports of the freight corridors

Overall, management boards and railway undertakings express the opinion that the current network of freight corridors already comprises the relevant lines for international freight traffic and diversionary lines, although a few lines are still considered to be missing (see Table I.27 in Annex I.2.2).

Cross-checking stakeholders' views on the lines that are considered to be relevant but missing in the current network of freight corridors, against the data on the level of freight activity provided by RailNetEurope[52], the identified missing lines can be confirmed as being relevant for international traffic, except for a few cases in Denmark and northern Germany (i.e., the lines Taulov-Aalborg, Duisburg-Cologne-Wasserbillig-Bettembourg, Osnabrück-Maschen, Rostock-Hamburg and the lines to Bremerhaven in East of Germany)[53]. Although not emerging from the stakeholders' consultation, other lines that could be taken into consideration for the further development of the freight corridor network are the line Paris-Geneve via Dijon (France-Switzerland), the section Hamburg-Berlin (Germany) and the line Innsbruck-Zurich (Austria-Switzerland) (see dedicated map accompanying Annex E.2).

The current network of freight corridors presents some overlapping sections[54], namely portions of the network where two or more freight corridors coincide. In practical terms, overlapping sections have implications on the allocation of infrastructure capacity. This specific aspect has been addressed in the framework for capacity allocation (see also Article 14), which introduced the "Network PaP rule" for capacity requests involving more than one freight corridor. Concerning capacity allocation, an interesting development to deal with the overlapping sections is the collaborative model of the one-stop shops jointly established by the Orient/East-Med and North Sea-Baltic freight corridors.

The stakeholders provided different opinions on the overlapping sections. For the corridor one-stop shop community and one member of the executive board, overlapping sections complicate the work and increase the administrative burden without attracting more rail transport. The position of two management boards is that overlapping sections should be duly analysed on a case-by-case basis as they are key points where traffic flows running throughout the freight corridors network can be coordinated by a supranational entity.

[52] For the purpose of this evaluation study, RailNetEurope provided datasets gathering data on freight trains running on the European railway network.

[53] See also Table I.27 in Annex I.2. In this respect, the line Taulov-Aalborg would connect the Danish rail network with the Scandinavian-Mediterranean freight corridor, the line Duisburg-Cologne-Wasserbillig-Bettembourg would connect the North Sea-Mediterranean and the North Sea-Baltic freight corridors, the line Osnabrück-Maschen would connect the Scandinavian-Mediterranean and the North Sea-Baltic freight corridors, the line Rostock-Hamburg and lines to Bremerhaven in East of Germany would provide connections to the Scandinavian-Mediterranean freight corridor.

Governance of the freight corridors

The Regulation establishes a governance structure involving all parties concerned in various bodies. In particular, according to Article 8, the Member States, the infrastructure managers and other stakeholders provide the resources to establish: (i) the executive board, (ii) the management board, which is also supported by a permanent management office and a number of working groups and (iii) the advisory groups of railway undertakings, and managers and owners of the terminals.

The Member States concerned established the executive boards of the freight corridors by appointing representatives of the competent national ministries who are tasked with defining general objectives, supervising and adopting measures (see also Article 8(1)). The desk research shows that the details of members of the executive board are not always provided, and that there is a lack of clarity on the specific roles assigned. As regards the organisation of the executive boards, they hold meetings at different intervals which vary by freight corridor. For the cases for which the information is available, the executive boards met between twice and four times a year.

The infrastructure managers concerned, and where relevant the allocation bodies, established the management boards responsible for measures implementing the freight corridor (see also Article 8(2)). With respect to their legal organisation, seven were established in the form of a European Economic Interest Group.

Acting as the operational body of the freight corridor, the management board can appoint a permanent organisation to support the day-to-day administration of the freight corridor (see Article 8.5). The information gathered shows that the infrastructure managers concerned provide the staff and the facilities necessary to install the permanent management office, as well as additional resources that may be necessary for the tasks of the working groups.

The stakeholders' consultation indicates that infrastructure managers broadly regard the development of international rail freight as an important activity of their commercial strategy, which suggests that they deem the implementation of the Regulation as worth spending resources on. Approximately half of the costs of managing the permanent office is borne by infrastructure managers via membership fees, while the rest is covered by EU contributions (i.e., Programme Support Actions and the Connecting Europe Facility). The staff of the permanent office consists of three to seven persons depending on the organisation, roles covered and whether these are full- or part-time positions. The corridor one-stop shop manager is a resource of the permanent management office (the one-stop shop is established according to Article 13).

The management board sets up advisory groups composed of managers and owners of the freight corridor terminals and of railway undertakings interested in the use of the corridor (see Article 8(7) and 8(8)). The information made available by RailNetEurope and the data gathered from desk research allows a comprehensive overview of: (i) the advisory group meetings held (i.e., on average, twice per year), (ii) the number of railway undertakings and terminal managers and owners involved and (iii) the number of attendees per advisory group (see also KPI I.9).

The working groups complement the governance of the freight corridors. They are coordinated by the permanent management office and bring together the technical experts of the infrastructure managers and allocation bodies concerned. The working groups were established to focus on a number of key topics, which are relatively common across the

freight corridors[55]. According to the information gathered, representatives of the railway undertakings concerned are involved in the working groups of only one freight corridor (see also KPI I.13).

As to the working groups, it is worth noting that they are established without a formal status. Also, their roles and duties can be modified to accommodate the requirements provided for by the Regulation and new working groups can be established. In general, stakeholders state that such a lack of formal status does not hamper the effectiveness of their activities.

As a final provision for the governance of the freight corridors, Article 8(9) gives a mandate to the management boards to coordinate, in accordance with national and European deployment plans, the use of interoperable IT applications or alternative solutions that may become viable in the future to handle requests for international train paths and the operation of international traffic on the freight corridor. The review carried out on book 1 of the corridor information document (see also Article 18) shows that freight corridors have adopted common IT tools to facilitate fast and easy access of the applicants to infrastructure capacity and information[56].

Specifically, with regard to the IT tool related to the "path coordination system", the opinion of concerned stakeholders is that it does not offer all of the necessary functionalities, is not sufficiently user-friendly and is missing interfaces with the infrastructure managers' systems. Respondents generally agree that this provision of the Regulation is not specific enough and it results, to a large or moderate extent, in a patchy implementation (e.g., introduction of interoperable systems at corridor level but lacking interfaces with the systems of individual infrastructure managers).

Measures for implementing the freight corridor plan

The management board implements the freight corridors by drawing up an implementation plan no less than six months before making the freight corridor operational and submitting it for approval to the executive board. As provided for in Article 9(1), the implementation plan presents the means and the strategy to develop, over a specified period, the measures necessary and sufficient to establish the freight corridor[57]. The plan also presents the corridor's characteristics and bottlenecks, the essential elements of the transport market study and the detailed specifications provided in Articles 11 to 19 of the Regulation. The review of the developed implementation plans shows that they were elaborated using a common structure and that the information requirements have generally been fulfilled, with just a few exceptions.

With respect to the requirements on the contents and structure of the implementation plan, the governance bodies of the freight corridors consider the provisions of the Regulation to be clear. However, a rather more negative view is expressed regarding the

[55] Temporary capacity restrictions, train performance, corridor one-stop shop and capacity management, interoperability and European Rail Traffic Management System, infrastructure development and communication and legal aspects.

[56] The common IT tools used are the path coordination system, the train information system, the charging information system and the customer information platform.

[57] The implementation plan is published by the freight corridors as book 5 of the corridor information document.

requirement to periodically review and update the implementation plan, as the management boards regard this as creating an unnecessary burden. Also, the position paper of one freight corridor points out that a lowering of the reporting requirements for the freight corridors is needed as the experience of recent years has shown that the annual, or regular, information on the conditions of use of the corridor can be restricted to book 4[58] of the corridor information document.

The implementation plan embodies an important element of the actual implementation of the freight corridors, namely the transport market study (Article 9(3)). The transport market study is carried out and periodically updated by the management board to present the observed and expected changes in the different types of traffic on the freight corridor, as a consequence of its establishment. The study also reviews the socio-economic costs and benefits stemming from the establishment of the freight corridor.

According to the desk research, transport market studies were developed by all the freight corridors, but only the Rhine-Alpine, North Sea-Mediterranean and Mediterranean freight corridors elaborated updated versions.

The review highlighted the fact that the transport market studies are relatively heterogeneous and do not follow a common approach across the specifications in Article 9(3). The observed and expected changes in traffic were analysed using different methodologies. Traffic forecasts were developed for freight and based on scenarios over the mid- to long-term, but no specific analyses were developed for passenger transport and its implications for freight. Socio-economic costs and benefits were only quantified for the Orient/East-Med and Rhine-Danube freight corridors. The Scandinavian-Mediterranean and the Amber freight corridors developed qualitative SWOT[59] analyses of the benefits.

The stakeholders' consultation provides interesting insights on the reasons behind the limited fulfilment of this provision of the Regulation. The transport market study is considered a useful tool to identify the volumes of freight that can be attracted to the freight corridor and potentially new customers, but they acknowledge that the crucial step of translating the identified volumes of international freight into pre-arranged train paths is largely missing in the studies.

The responses gathered during the consultation show that the freight corridors have developed the capacity offered on the basis of the transport market studies only to a small extent or not at all. This is essentially because the providers of rail freight services do not have an actual incentive to request pre-arranged paths as they do not provide any particular benefit in comparison with the paths sold by a single infrastructure manager.

Finally, the view provided by stakeholders is that transport market studies should be developed at the level of the core network corridors, with freight corridors acting as modal experts and providing sectorial expertise. This would also avoid the presentation of different results.

Investment in the freight corridors

Another important element for implementing the freight corridors is the investment plan (see Article 11). The investment plan is elaborated as chapter 6 of book 5 of the corridor

[58] Book 4 describes the procedures for capacity and traffic management.

[59] SWOT stands for strengths, weaknesses, opportunities and threats.

information document and the review carried out shows that the level of compliance with the information provided is variable with respect to the specifications of the Regulation.

The list of the projects is provided at a country level across all of the documents elaborated. Likewise, the deployment plans relating to the interoperable systems are provided, although quantitative cost-benefits analyses are missing, and a qualitative description of the main effects is available only for some cases. The plans for the management of capacity, including removing the bottlenecks, were provided by all the freight corridors. The literature review identified one freight corridor which has developed a capacity bottleneck analysis to determine the infrastructure bottlenecks based on one common valuation method. The analysis concluded that a common method for capacity, definitions for bottlenecks and approaches to traffic forecasts cannot be developed, because the existing approaches at the infrastructure manager level differ widely[60].

In relation to the investment plan, the Regulation provides that investments in freight corridors should be coordinated between Member States and the infrastructure managers concerned to guarantee consistency and continuity of the infrastructure capacities available along the freight corridor. On this aspect, the general view of the stakeholders is that the Regulation has been effective to a small extent or not at all. Also, based on the data of RailNetEurope for four freight corridors, few measures have been implemented via the investment plans between 2013 and 2018.

The view of the stakeholders is also rather negative with regard to the extent to which the capacity bottlenecks identified in the investment plan have been removed. The majority considers that this was possible only in a few cases. Finally, according to the stakeholders, the deployment plan relating to the interoperable systems provides negligible added value.

The availability of capacity is influenced by the works carried out on the infrastructure and its equipment. According to Article 12, the management boards of the freight corridors shall coordinate and ensure that the publication of these is in one place, and undertaken in an appropriate manner and timeframe, so that the schedule for carrying out the works would not restrict the available capacity on the freight corridor. Findings from the desk and field research indicate that although Annex VII of Directive 2012/34/EU introduced detailed requirements that are directly applicable in all Member States, the infrastructure managers deal with temporary capacity restrictions by applying different procedures, which are in turn dependent on budget and financial planning. In addition, different national legal regulations apply to temporary capacity restrictions regarding the terms and communication with applicants[61].

The freight corridors publish details the works that restrict capacity on average twice per year and set out the approach for capacity and traffic management in book 4 of the corridor information document. The findings stemming from the field research indicate that despite

[60] The analysis found that developing a cost-benefit analysis is the most important factor taken into account when addressing an infrastructure bottleneck. Besides that, the infrastructure managers of the concerned freight corridor also consider other factors as important (e.g., international agreements, legal obligations, available budget and (local) government wishes).

[61] The analysis of the extent to which the operational objective 2.3 has been achieved (see evaluation question 6.3 in Annex I.2.2) provide further elements in this respect. Findings from the field research show that the (i) level of coordination of the planning of works within the infrastructure managers, with a view of implement the provisions of Annex VII of Directive 2012/34/EU, and (ii) the coordination of the technical capacity restrictions within the freight corridors have been only partial.

the periodic publication of temporary capacity restrictions significant coordination takes place at a bilateral level amongst the infrastructure managers Overall, the approach of the freight corridors reflects the guidelines of RailNetEurope published in 2011 to which few further specifications have been added. The websites of the freight corridors and the customer information platform of RailNetEurope are the tools used for the publication of the temporary capacity restrictions (e.g., in the form of spreadsheets). The North Sea-Baltic and the Amber freight corridors also provide impact sheets for some temporary capacity restrictions with high relevance for international rail freight.

Despite the procedures in place for the coordination and publication of temporary capacity restrictions at the freight corridor level, the targeted interviews performed highlighted that the freight corridors perceive the quality of the coordination of temporary capacity restrictions as only being slightly effective. Railway undertakings stressed that there is a prevalence of national approaches, a situation leading to the common practice of a railway undertaking affected by temporary capacity restriction taking over the international coordination by informing the partner railway undertaking(s) that they, in turn, should contact their national infrastructure managers.

Even though temporary capacity restrictions are published at the freight corridor level, they essentially consist of secondary information, which relies on the primary information in the hand of the infrastructure managers. In this respect, the railway undertakings widely regard the publication and information of the freight corridors as an additional source of information to the publications of the infrastructure managers.

Management of the freight corridors

Capacity allocated to freight trains

The capacity that the freight corridors' managers have allocated to organising pre-arranged paths and reserving capacity for international freight trains is conceived to provide a quick response to *ad hoc* requests.

According to Article 14(3), the infrastructure managers of the freight corridors jointly define and organise international pre-arranged train paths for freight trains following the procedure referred to in Article 15 of Directive 2001/14/EC[62]. The aim of the pre-arranged train paths is to facilitate journey times, frequencies, times of departure and destination and routings suitable for freight transport services to increase the transport of goods by freight trains running on the freight corridors. The pre-arranged train paths are published no later than 3 months before the final date for receipt of requests for capacity, as referred to in Annex III of Directive 2001/14/EC.

Since the freight corridors were established[63], the rules concerning pre-arranged train paths have been applied by the one-stop shops acting as coordinators of the freight corridors. The rules have also been applied following the guidelines published by

[62] European Union (2001). Directive 2001/14/EC of the European Parliament and of the council of 26 February 2001 on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification.

[63] See the annex of Regulation (EU) 913/2010 listing the initial nine freight corridors.

RailNetEurope in 2016[64] and the commonly agreed framework for the allocation of infrastructure capacity adopted by the freight corridors in 2018 (see Article 14(1)).

Overall, the data gathered on infrastructure capacity allocation show that for the years for which there is the most comprehensive data on infrastructure capacity across the freight corridors, namely between 2016 and 2018, the volume of pre-arranged train paths offered has remained relatively unchanged at between 108.2 and 116.1 million path-km. Distinguishing by freight corridor, the Rhine-Alpine and the North Sea-Mediterranean are the largest contributors to this figure despite showing opposite trends between 2015 and 2020. For the Rhine-Alpine freight corridor, the volume of pre-arranged train paths offered has decreased from 27.3 to 17.6 million path-km (-36%), while the volume offered by the North Sea-Mediterranean freight corridor has substantially increased from 7.6 to 24.7 million path-km (+181%).

The volume of pre-arranged train paths offered by the Scandinavian-Mediterranean freight corridor is smaller compared to these two freight corridors, but remained relatively unchanged between 2015 and 2018 and comprises around 15 million path-km. For the other six freight corridors[65], the volume of pre-arranged train paths offered is between 5 and 15 million path-km per year. With respect to the volume of pre-arranged train paths offered, the volume requested by rail freight service operators (i.e., railway undertakings and other applicants[66]) is a relatively small fraction. Between 2016 and 2018, the share of pre-arranged train paths requested was 33%-35% of the total capacity offered (see Table 12).

Table 12: Volume of total pre-arranged train paths requested and offered by the nine freight corridors (million path-km)

Indicator	2016	2017	2018
Capacity requested	36.6	37.4	39.2
Capacity offered	111.9	108.2	116.1
Ratio	**33%**	**35%**	**34%**

Source: compilation based on data of RailNetEurope (KPI II.1 and II.2)

Limitations hampering the implementation of this provision of the Regulation can be ascribed to two key aspects: the subsequent changes introduced to the pre-arranged train paths offered by the corridor one-stop shop; and a lack of harmonisation at border crossings.

The changes introduced to the pre-arranged train paths after the allocation are a relevant and tricky issue stemming either from the need of the infrastructure managers to carry out the works on the infrastructure and its equipment (see also Article 12) or from the

[64] RNE (2016). RNE Guidelines for Corridor One-Stop Shops (C-OSSs) of European Rail Freight Corridors (RFCs) for managing Pre-arranged Paths (PaPs) and Reserve Capacity (RC) (latest update, December 2016).

[65] The data of the capacity offered is not available for the Alpine-Western Balkan and Amber freight corridors.

[66] Applicants other than railway undertakings may consist of shippers, freight forwarders and combined transport operators (see Article 15).

needs of the railway undertakings to adhere as much as possible to the requests of its customers.

The responses gathered from the stakeholders' consultation report suggest that, after the completion of the allocation process, the freight corridors have contributed to capacity management only to a small extent or not at all. Nevertheless, it is worth noting that this limitation is strictly linked to the organisation of the capacity allocation process. In practice, a corridor one-stop shop acts as an intermediary between the needs of rail freight operators and the volume of international capacity allocated by infrastructure managers to the freight corridors. The task of allocating the pre-arranged train paths offered by the freight corridor ends in the month of August of the year preceding the change of the annual working timetable[67], and any change to that timetable introduced after that time is the responsibility of the infrastructure managers.

The view of the railway undertakings is that subsequent changes introduced to the pre-arranged paths offered after the completion of the allocation phase should be as limited as possible in order to improve the quality of international rail freight services. In this respect, the quality criteria relating to the certainty of the path are judged as being highly relevant by railway undertakings, whether or not they are running freight trains on the freight corridors. The railway undertakings also consider it very or somewhat important that the fact that the pre-arranged train paths are actually pre-arranged and published in advance allows them to be safeguarded against competing uses (i.e., passenger services), or against temporary capacity restrictions for carrying out infrastructure and equipment works.

Nevertheless, the railway undertakings also report that the pre-arranged paths should benefit from stronger protection against subsequent changes by the infrastructure managers and that an important aspect to address is the need to achieve better coordination of infrastructure works that cause temporary capacity restrictions. The identification of solutions to address this issue is deemed an underlying precondition for improving the stability of the pre-arranged paths and ultimately their actual use. If a railway undertaking has to cancel or modify a pre-arranged train path and submit a new request for another path, this constitutes an inconvenience and may trigger a lack of trust towards the freight corridors.

A number of written contributions gathered during the field research stress the need for a carefully planned schedule of infrastructure works to protect the pre-arranged paths from temporary capacity restrictions and enhance their level of stability. For example, this can be found in the position papers of one freight corridor and two members of the executive board. It is also worth reporting that an umbrella association of railway undertakings states that a dialogue in the form of regional working groups involving railway undertakings and infrastructure managers would be helpful, especially where a comprehensive analysis and planning of temporary capacity restrictions is necessary. In this regard, the umbrella association mentions the Brenner working group of temporary capacity restrictions of the Scandinavian-Mediterranean freight corridor as an example for consideration.

Changes to the pre-arranged paths implemented after the allocation can also be requested by railway undertakings, but they are generally relatively limited. This depends on the volume of pre-arranged paths offered by the freight corridors (i.e., the quantity), which in

[67] According to Annex VII of Directive 2012/34/EU establishing a single European railway area, the change of the working timetable takes place at midnight on the second Saturday in December. For example, the start of the timetable of 2022 is scheduled on 12 December 2021.

turn depends on international capacity allocated by the infrastructure managers to the freight corridors, and on the characteristics (i.e., the quality) of the pre-arranged paths.

In relation to the volume of capacity allocated, the railway undertakings largely criticise the Regulation for not sufficiently defining specific requirements for the quantity of the pre-arranged paths to be offered. This may imply that infrastructure managers can circumvent the requirement to safeguard sufficient capacity for international rail freight by offering fewer pre-arranged paths than are actually needed.

In relation to the quality of the capacity allocated, railway undertakings consider it important that a capacity product should adhere as much as possible to the customer's needs. In response, the North Sea-Mediterranean freight corridor has created an offer that is as close as possible to client expectations. As changes still persist, the corridor's one-stop shop conducted a survey, in collaboration with the Atlantic and Mediterranean freight corridors, to monitor potential applicants and support the infrastructure managers in elaborating an even more client-oriented offer of pre-allocated paths.

The position paper of one freight corridor points out that the quality aspect should be considered if the revision of the Regulation is to be effective and suggests the introduction of measures to bring flexibility for real *ad hoc* products and paths. In this light, the Mediterranean freight corridor has initiated the project "PaP workflow monitoring" to analyse the stability of the pre-arranged paths after their allocation and has introduced a short-term capacity pilot on the eastern part of the freight corridor to offer a harmonised capacity up to 8 days before the train run. Likewise, the Orient/East-Med freight corridor started a new service-oriented initiative offer in 2016, inviting applicants to preliminary consultations that aimed to improve the quality of the pre-arranged paths.

The harmonisation at border crossings is another important aspect related to the pre-arranged train paths in terms of interest of the market and their stability after allocation. The national rules and/or regulations in place demand time-intensive operational processes at some border points (e.g., the change of drivers and locomotives, customs procedures and technical adaptions). Improving and streamlining this process is important to increase the quality of the capacity offered and ultimately its attractiveness. The responses of the stakeholders indicate that they evaluate that freight corridors supported the improvement of the harmonisation of interoperability of railway operations and other barriers at border crossing, in general, to a moderate extent, or small extent.

The issue of the harmonisation at border crossings was also raised in written contributions of concerned stakeholders. A freight corridor considers the issue as one of the main drawbacks of operational interoperability along the corridor and that it was partly responsible for decreasing the punctuality to even less than 50% at certain borders. A major infrastructure manager comments that infrastructure managers and railway undertakings should work jointly to achieve the interoperability of the operational processes and that, to avoid bottlenecks at border crossings, international trains should always run on pre-arranged train paths.

According to Article 14(5), the infrastructure managers shall, if justified by market need and the evaluation referred to in paragraph 2 of this Article, jointly define reserve capacity[68] for international freight trains to allow for a quick and appropriate response to

[68] The reserve capacity consists of a certain volume of non-used pre-arranged train paths that are selected from the timetable and hold available until 30 days before a train run. If the slot selected as reserve capacity is in the end not actually used, it is returned to the concerned infrastructure manager(s).

ad hoc requests for capacity as referred to in Article 23 of Directive 2001/14/EC. The data of RailNetEurope show that between 2016 and 2018 all freight corridors have allocated reserve capacity, but also that the trends are generally negative and the level of requests practically negligible (see Table 13).

Table 13: Volume of reserve capacity requested and offered by the nine freight corridors (million path-km)

Indicator	2016	2017	2018
Capacity requested	2.8	1.7	2.8
Capacity offered	37.8	27.7	30.4
Ratio	**7.4%**	**6.1%**	**9.2%**

Source: compilation based on data of RailNetEurope (KPI II.1 and II.2)

The low volume of requests for reserve capacity can be explained by considering the distribution of requests for *ad hoc* trains of a major infrastructure manager. The majority of path requests are placed 8 months before the start of the national timetable, but many are modified just a few days, or even within hours, of the actual train run (i.e., 80% of the path requests are received less than 4-5 days before first train run and 40-50% are received less than 1 day before the first train run). To make this product more attractive and to enable it to meet the demand of late *ad hoc* path requests, the 60-day deadline for reserve capacity provided in Article 14(5) was shortened to a 30-day period in the common framework for capacity allocation[69]. However, this change is evaluated by the community of corridor one-stop shops and an umbrella association of railway undertakings as not being ambitious enough to let the reserve capacity fulfil its intended role for *ad hoc* paths.

The responses gathered from the stakeholders' consultation show that the railway undertakings evaluate the reserve capacity as meeting the necessary quality criteria to a small extent, or not at all. The poor outcome is linked not only with the different timelines that exist between the capacity allocation process and rail freight transport operations, but also to a lack of existing interfaces between the freight corridors path coordination system[70] and the national tools for paths capacity request, which is especially important for short deadlines.

Traffic management

Alongside the allocation of infrastructure capacity, traffic management in normal conditions is another important aspect at the international level, particularly in relation to informing continuously the infrastructure manager of the trains approaching its network. Article 16(1) provides for the establishment of procedures for coordinating traffic along connected freight corridors and the network-based nature of the international rail freight has

[69] After a progressive harmonisation process and negotiations between the freight corridors, the regulatory bodies and the Commission, a common framework for capacity allocation to all nine freight corridors was developed in November 2015.

[70] The path coordination system is an international path request coordination system for path applicants (i.e., railway undertakings, infrastructure managers and allocation bodies). The internet-based application optimises international path coordination by ensuring that path requests and path offers are harmonised by all involved parties.

progressively induced the development coordination actions, both in terms of governance and implementation.

According to the elements gathered throughout the stakeholders' consultation, the overall view is that the voluntary coordination across freight corridors has been effective and more flexible than the coordination based on legal requirements. Nevertheless, when it comes to distinguishing by stakeholder groups, the points of view are somewhat different. On the one hand, the members of the governance structure of the freight corridors and the infrastructure managers are inclined to think that voluntary cross freight corridors coordination has been effective and more flexible than the coordination based on legal requirements. On the other hand, railway undertakings, terminal managers and owners, and customers are more inclined to report that such voluntary coordination has been insufficient to ensure adequate cooperation and harmonisation at the network level.

Traffic management in the event of disturbance

Article 17 provides for traffic management in the event of disturbance, indicating that the management board shall: (i) adopt common targets for punctuality and/or guidelines for traffic management in the event of disturbance (Article 17(1)) and (ii) draw up priority rules for the different types of traffic (Article 17(2)).

At the international level, the trains running on the networks of neighbouring infrastructure managers can be affected by disturbances and the traffic management of the neighbouring infrastructure managers needs to be informed promptly and involved throughout the event's management process. At the freight corridor level, common targets for punctuality or guidelines for traffic management in the event of disturbance have not been implemented.

Book 4 of the corridor information document explains that in the case of disturbance, infrastructure managers work together with the railway undertakings concerned and with neighbouring infrastructure managers to limit the impact and reduce overall recovery time. For international disruptions lasting longer than three days, and with a high impact on international traffic, the contingency management approach of the International Contingency Management Handbook is applied. Further specifications with respect to this handbook have not been added at the freight corridor level, as the bilateral agreements in place between infrastructure managers are deemed sufficient to ensure that all traffic on the network can be managed in the most optimal way.

The infrastructure managers concerned have drawn up priority rules for the management of different types of traffic and RailNetEurope provides an overview at the country level with respect to (i) the legal status of the priority rules in operation, (ii) the structure of the priority rules in operation and (iii) the status of the international traffic. The review of the priority rules in place shows that the railway networks of neighbouring infrastructure managers largely do not share the same priority status, and for countries with a higher share of international traffic the freight trains are not granted priority status.

Information on the conditions of use of the freight corridor

In Article 18, the Regulation provides for a document to be drawn up, published and regularly updated by the management board to present the information on the conditions of use of the freight corridor. Along with the implementation plan, the document shall contain information related to (i) the national network statements concerning the freight corridor, (ii) the terminals of the freight corridor and (iii) capacity allocation and traffic management, also in the event of a disturbance.

All of these elements have been organised in the form of the corridor information document following the guidelines developed by RailNetEurope, which allowed for the adoption of a harmonised organisation throughout five books and led to the provision of comparable and structured information. The review of the latest versions of the corridor information documents shows that the structure of the five books is in line with the guidelines of RailNetEurope. All technical information and parameters are provided. Differences can be found in the format for displaying the information and this may depend on the approach used by the infrastructure managers concerned to elaborate the information.

As noted earlier, different approaches have been found for specific parts of the corridor information document and in particular, for the approach, structure and content of the transport market studies, which vary significantly. It is also worth noting that the freight corridors publish their own annual and performance reports to summarise the work carried out and their achievements. The format, style, and organisation of the structure of this publication differs widely across the freight corridors, as each structure has developed its own distinctive style to make it easy to recognise.

Regulatory bodies

For the implementation of the provisions of the Regulation, the regulatory bodies cooperate in monitoring competition in the rail freight corridors and in ensuring non-discriminatory access (see Article 20). The regulatory bodies also act as appeal bodies as provided for in Article 30(2) of Directive 2001/14/EC. With respect to the cooperation activities in place, the reports on the monitoring of the implementation of the Regulation (see Article 22) mention that cooperation activities have been established by the regulatory bodies of the Scandinavian-Mediterranean, Atlantic and Orient/East-Med freight corridors. The field research did not provide additional evidence regarding other coordination activities between the participating regulatory bodies.

For the activity of ensuring non-discriminatory access and acting as appeal body, the responses gathered during the consultation show that out of 22 respondents, 21 regulatory bodies did not report complaints lodged from applicants. Among these, three have launched own-initiative investigations (see also KPI II.24).

It is also worth noting that according to data of RailNetEurope, the overall share of conflicting requests for pre-arranged paths[71] is between 14% and 21% of the total path requests submitted for the period 2017-2019 (see Table 14). Considering that conflicting requests can be addressed through the framework for capacity allocation (see Article 12) and that discrimination could also result from other issues related to conflicts between path requests (e.g., national laws or non-harmonised train paths), this suggests that the actual level of involvement of the regulatory bodies in monitoring competition in the rail freight corridors could be low[72].

[71] A conflict between requests occurs when a dossier of a path request, submitted via the path coordination system, is in conflict with at least one other dossier on the same freight corridor.

[72] The data gathered do not provide evidence to develop a comparison of the same share for paths requests not submitted via the one-stop shops.

Table 14: Number of path request and share of conflicts

Indicator	2017	2018	2019
Conflicts	105	92	130
Path requests	491	637	725
Share of conflicts	**21%**	**14%**	**18%**

Source: compilation based on data of RailNetEurope

Conclusions

The implementation of the provisions varies between the chapters of the Regulation, which address (i) the designation and governance of international rail corridors for competitive freight, (ii) investment in the freight corridor and (iii) management of the freight corridor.

In particular, the articles for which there has been a full implementation are those referring to the establishment of the governance bodies and to the provision of the essential information to access the services of the freight corridors.

Nevertheless, it is worth observing that, although the one-stop shops of the freight corridors fulfil the provisions of the Regulation in terms of the provision of capacity allocated to freight trains (i.e., pre-arranged paths and reserve capacity), the Regulation's actual effectiveness is hampered by factors that are outside of their scope and responsibility. First, the quantity of capacity allocated by the one-stop shops of the freight corridors depends on the capacity that the infrastructure managers transfer, on a voluntary basis. Second, the one-stop shops of the freight corridors do not have control over the capacity offered, as it can be subject to (i) discretionary changes by infrastructure managers (e.g., scheduling temporary capacity restrictions) and (ii) subsequent requests for modification by the railway undertakings (e.g., to respond to *ad hoc* market needs).

Aspects for which the implementation of the provisions has been judged as being moderate are those referring to activities that do not lie fully within the scope or competence of the freight corridors. For aspects concerning investment planning, traffic management in normal conditions and traffic management in the event of a disturbance, the approaches and rules of the national infrastructure managers still prevail, which hampers the role of the freight corridors as coordinators at the international level. The freight corridors lack a clear role, as well as suffering from an overlap of activities with the core network corridors as far as the investment plan and the transport market studies are concerned. Table 15 presents the summary of the evaluation of the implementation of the provisions of the Regulation.

Table 15: Evaluation of the extent of implementation of the provisions of the Regulation

Chapter	Article	Subject matter of the provision	Level of Evaluation of the extent of the implementation
Designation and governance of the international rail corridors for competitive freight	3 to 6	Designation and selection and modification of further freight corridors	Large extent
	8	Governance of freight corridors	Large extent
	9	Measures for implementing the freight corridor plan	Moderate extent
Investment in the freight corridors	11	Investment planning	Moderate extent
	12	Coordination of works	Large extent
Management of the freight corridors	13	One-stop shop for application of infrastructure capacity	Large extent
	14	Capacity allocated to freight trains	Large extent
	16	Traffic management	Moderate extent
	17	Traffic management in the event of disturbance	Moderate extent
	18	Information on the conditions of use of the freight corridor	Large extent
	20	Regulatory bodies	Moderate extent

Source: compilation of the authors based on the main findings

5.2.2. EQ.6: To what extent have the general, the specific and the operational objectives of Regulation 913/2010 been achieved?

Introduction

This evaluation question aims to assess the contribution of the Regulation to the achievements of the general, specific and operational objectives.

The answers to the questions are based on the findings stemming from the desk research and complemented with the findings of the stakeholder consultation (including the Commission's open public consultation), the review of the written contributions provided by the stakeholders and the analysis developed in the context of the topical case studies. Dedicated tables summarise the extent to which the Regulation has contributed to achieving the objectives.

The final section presents the analysis of the extent to which the Regulation made possible the development of rail freight transport and a modal shift from road to rail. The elements of the analysis are drawn from the main findings of the previous questions, the desk research and from the definition of the baseline (see section 4), which in turn relies on the analysis of datasets made available by RailNetEurope.

A detailed presentation of the main findings by sub-question is provided in Annex I[73].

Main findings

Extent to which the Regulation has contributed to achieving the general objectives

General objective of improving cooperation between infrastructure managers and other stakeholders

In relation to the first general objective of improving the coordination between infrastructure managers across borders and with other stakeholders, the findings of the desk research based on RailNetEurope data show that the situation has generally improved. The stakeholders meet regularly in advisory groups set up by the management boards of the freight corridors involving (i) the railway undertakings interested in the use of the freight corridors and (ii) the managers and owners of the terminals of the freight corridors[74].

The responses gathered throughout the field research show that both groups largely confirm their participation in the advisory groups, although with some limitations expressed by terminal managers and owners due to resource constraints. The review of the written contributions provides some additional elements to enable the evaluation of the extent to which this cross border collaboration has been effective.

First, one executive board member and one management board highlight as being important the extension of the cooperation of the advisory groups to also include buyers, shippers and forwarders as they are the players who make the actual decision of which transport mode to use. An umbrella association of shippers also points out that the operators are involved only on a consultative basis in the decisions related to the operation of the freight corridors.

Second, another two umbrella associations remark that, while a dialogue between the governing bodies of the freight corridors and the members of the advisory groups does exist, it is not very effective as the advisory groups do not have real decision-making power. The advisory groups are based on an invitation-only principle that makes communication one-way and gives stakeholders limited influence on decisions already taken. A stronger and more strategic cooperation would allow the groups to take more of the opinions of stakeholders into account and help the decision-making process to become more effective, whilst also improving the ability of infrastructure managers to respond to market needs and find common solutions at the international level.

Two infrastructure managers share the opinion that a stronger involvement of railway undertakings and terminal managers and owners would be necessary, and propose to reinforce their role in the process by selecting the speaker via official elections and involving the speaker in management and executive board meetings. Similarly, the position of one freight corridor is that coordination via executive board members should be improved e.g. by regularly inviting participants of the railway advisory groups. The need to introduce these improvements is also expressed by an umbrella association of railway undertakings.

[73] See section I.2.2.

[74] According to Article 8(7) and 8(8).

General objective of giving sufficient priority to rail freight to meet freight market needs

The second general objective addresses the priority given to rail freight transport to meet market needs, which is evaluated in terms of the capacity allocated and traffic management.

With respect to the priority given to freight trains in capacity allocation, the rules defined by the framework for capacity allocation provide a common benchmark to take decisions (see also Article 14). According to the majority of stakeholders the rules set in the framework for capacity allocation are too simple, as they are based on the principle of the quantity of requested capacity. This approach to capacity allocation implies that a priority status is assigned to whoever books larger volumes of train paths.

Also, according to the data gathered from the field research, approximately 10% of international rail freight traffic is making use of the capacity allocated via the corridor one-stop shop[75]. This may suggest that the Regulation has not resulted in sufficient priority being given to rail freight compared to other rail segments (i.e., different types of passenger traffic).

The stakeholders also remark that (i) the framework for capacity allocation applies only to the paths allocated on the freight corridors and not to those outside of the designated lines, (ii) that capacity requests directly addressed to the infrastructure managers can ensure a higher degree of flexibility and (iii) that the current framework does not have an influence on the priority given to the capacity allocated to passenger services.

With respect to giving priority to freight trains in operation, the analysis based on the overview of RailNetEurope data at the European level shows that rules applied to traffic management vary significantly. Neighbouring infrastructure managers largely do not give freight the same priority status, and in countries that have a high share of international traffic (i.e., along north-south freight corridors) international freight trains are not granted a specific priority status.

In light of the priority rules currently in place, railway undertakings interested in the use of the freight corridors largely believe that the activity of the freight corridors had a small or no impact on the performance of freight trains in terms of punctuality, dwelling time at border crossings and the costs of planning and operating international freight trains. The view expressed is relatively more optimistic only for commercial speed.

General objective of simplifying the use of rail infrastructure

The third general objective focuses on simplifying the use of railway infrastructure. To optimise the use of the rail network, the Regulation introduced procedures to strengthen the cooperation between infrastructure managers on the allocation of international train paths for freight trains, and Article 13 establishes a corridor one-stop shop to facilitate requests for infrastructure capacity.

The responses gathered from the stakeholder consultation and the Commission's open public consultation show that the corridor one-stop shop is considered to provide a small facilitation effect, as the scope of the offered services is too limited to make it a viable option to request and manage capacity. The general view is that the freight corridors are coordinators and providers of information intelligence, while the actual decisions are taken

[75] See Annex I.2, concerning the operation objective 4.2 of increasing the quantity and quality of infrastructure capacities allocated to freight traffic.

at the national level by competent ministries and infrastructure managers. Also, according to several railway undertakings, infrastructure managers and management board members, the number of actors involved and processes essentially increased with the establishment of the freight corridors.

The existence of a separate process for offering a certain volume of international capacity was found to be a root cause of the weak role of the corridor one-stop shops play. The resulting fragmentation of the offer has not resulted in an optimal situation as the existence of separate processes complicates (i) the path requests of the railway undertakings and (ii) the path construction process of the infrastructure managers.

The issue of the path construction process is also reported by an infrastructure manager who stated that complications due to the parallel international and national channels, as well as the discontinuity throughout the overall process of path request and subsequent modifications (e.g., for temporary capacity restrictions), weaken the trust of railway undertakings in corridor one-stop shops. An umbrella association of railway undertakings stresses that the corridor one-stop shops have a limited responsibility in the path allocation process, and are mainly involved in the construction phase and the publication of the capacity offer.

Smaller railway undertakings report that they do not use the capacity products of freight corridors and prefer to submit path requests directly to the national infrastructure managers. For international transport, corresponding paths with other infrastructure managers are either organised by partner railway undertakings, or directly managed with the foreign infrastructure managers because they do not perceive that any added value is brought by the freight corridors.

A number of written contributions from executive and management board members broadly agree that the role of corridor one-stop shops should be reinforced and that an integration of corridor one-stop shops should be conducted at the European level in order to ensure the consistent monitoring and coordination of the allocation of international capacity.

General objective of strengthening the integration of rail freight in multimodal transport

The fourth general objective addresses the need to strengthen the integration of rail freight multimodal transport. The development of intermodal freight terminals is deemed necessary to support the establishment of rail freight corridors, and Article 9(4) provides that the implementation plan shall take into account the development of terminals to meet the needs of rail freight running on the freight corridor, in particular by acting as intermodal nodes.

With respect to the appropriateness of the requirement that the management boards of the freight corridors have to coordinate rail capacity with access to terminals, the view of the stakeholders is not consistent. While executive board members consider the instrument to be appropriate for the performance of the function and thus the achievement of this general objective to a large or moderate extent, the view of the management board members and infrastructure managers is more cautious and varies between moderate and small.

Article 16 provides that the infrastructure managers of the freight corridors and the advisory groups have to put in place procedures to ensure the optimal coordination between the operation of the railway infrastructure and the terminals. In this respect, infrastructure managers think that the procedures that have been put in place are effective to a large or moderate extent, while for terminal managers and owners and regulatory

bodies this has been achieved to a small extent or not at all. In this regard, the effectiveness of the Regulation can also be analysed by evaluating the extent to which the freight corridors have provided added value in terms of coordinating with and accessing terminals compared to actions undertaken at a bilateral level. Overall, the view of the stakeholders is that the Regulation has been effective only to a small extent or not at all in this respect.

Finally, the view of railway undertakings on the extent to which the procedures to coordinate the operations of railway infrastructure and terminals put in place by infrastructure managers and terminals have impacted on the performance of international rail freight services is that the effectiveness of the freight corridors is small or non-existent, in relation to all performance indicators assumed (i.e., commercial speed, punctuality, dwelling time at border crossings and planning and operating costs of rail freight services).

The desk and field research provide further elements to evaluate the extent to which this general objective has been achieved and two main challenges were identified.

The first challenge consists of the need to improve last-mile connections, which are a crucial element for multimodal connectivity. The position papers of the umbrella associations of (i) sea and inland ports, (ii) shippers and (iii) private port companies and terminals, broadly agree on the need to focus on the development of infrastructure for last-mile connections by providing access to the terminals' sidings. Adequate funding for investments is deemed necessary to maintain and refurbish old physical assets and often outdated technological equipment.

Dedicated last-mile studies were developed by two freight corridors. Both studies identified an important element on the operational side as being a higher level of efficiency of shunting operations linking the long-haul journey with the loading/unloading facility of the terminal. For most of the cases, the two processes are separate, and normally, it is the long-haul journey path that determines the slot at the terminal, which is mostly extemporaneous.

The second challenge is a need to improve the performance management of end-to-end transport services. As most terminals do not act as rail operators, they do not offer any rail-related services and two problems linked with this specific situation are (i) the reliability of the booked train path and (ii) the estimated time of arrival of the train. This also implies that many port and terminal operators do not receive information about the actual position of a train running on the rail network. Even if the situation has improved over the last few years, with tracking and tracing tools, no or wrong information can lead to major problems of coordination and the postponement of services and shifting of personnel, as well as to the loss of an entry slot.

In general, port and terminal operators are relatively critical about the traffic management and cooperation for train handovers at last-mile connections with the infrastructure managers. However, the evaluation varies between different terminal operators and depends on the local situation and the coordination procedure in place with the national infrastructure manager.

The position papers of an umbrella association of shippers and of the European chemical industry stress the importance of knowing on which freight train cargo is travelling to ensure the sound coordination of the actors throughout the logistics chain and the organisation of adequate contingency plans in case of delay or disruption. On this matter, the position paper of one freight corridor points out that the end-to-end performance management of the load units lies outside of the freight corridors' and infrastructure managers' influence.

Table 16 presents a summary of the evaluation of the extent to which the Regulation contributed to achieving the general objectives.

Table 16: Summary of the evaluation of the extent to which the Regulation contributed to achieving the general objectives

General objective	Evaluation of the extent to which the Regulation contributed to achieving the general objective			
	Large	Moderate	Small	Not at all
General objective 1: Improving coordination between infrastructure managers and other stakeholders		√		
General objective 2: Giving sufficient priority to rail freight traffic to meet freight market needs			√	
General objective 3: Simplifying the use of rail infrastructure		√		
General objective 4: Strengthening the integration of rail freight multimodal transport			√	

Source: compilation of the authors

Extent to which the Regulation contributed to the specific objective (1) of improving coordination between infrastructure managers and with Member States, railway undertakings and terminal operators and its operational objectives

The first specific objective of the Regulation is horizontal given that it broadly applies to several areas of the Regulation. It stems from the conclusion that existing EU legislation aimed at opening the rail freight market, which was adopted prior to the Regulation, was not sufficient to organise, regulate and secure international rail freight transport.

In general, the view of the stakeholders gathered from the consultation is that the Regulation has been moderately effective. However, there are different views among stakeholder groups.

On the one hand, the governance bodies of the freight corridors and the infrastructure managers are more inclined to conclude that this specific objective has been achieved very effectively, an opinion that can also be found in the written contributions provided. On the other hand, railway undertakings, terminal managers and owners and customers are more sceptical, which is reflected in the relatively high share of stakeholders who conclude that the Regulation has been slightly or not effective. Having said that, the position paper of an umbrella association of railway undertakings acknowledges that a point of strength of the establishment of the governance structure for freight corridors lies in starting an exchange of national experiences, sharing initiatives and harmonising rules, which also softens the prevalence of national interests.

For the related operational objectives, the main findings gathered during the desk and field research indicate that they have been achieved to a large or moderate extent, except for ensuring consistency with the trans-European Transport Network and European Rail Traffic Management System corridors and with other EU policies, funds and institutions.

In this respect, the concerned stakeholders felt that a clear allocation of the roles was not properly delineated with respect to competences, practical work and the activities of the core network corridors. This especially holds true for investment planning, the deployment of new technologies and telematics applications (including the European Rail Traffic Management System) and the transport market studies. Also, stakeholders pointed out, both during the interviews and in written contributions, that there exists an overlap of

activities carried out by freight corridors and by core network corridors, which often implies a duplication of work.

Table 17 presents a summary of the extent to which the Regulation contributed to achieving the specific objective of improving coordination between infrastructure managers and with Member States, railway undertakings and terminal operators and its related operational objectives.

Table 17: Evaluation of the extent to which the Regulation contributed to achieving the specific objective 1 of improving coordination between infrastructure managers and with Member States, railway undertakings and terminal operators and its related operational objectives

Specific and operational objectives	Contribution of the Regulation			
	Large	Moderate	Small	Not at all
Specific objective 1: Improving coordination between infrastructure managers and with Member States, railway undertakings and terminal operators		√		
Operational objective 1.1: Establishing and developing initial and further international rail freight corridors forming a European rail network for competitive freight which supports, taking into account socio-economic costs and benefits, the development of international rail freight traffic and major trade flows based on an implementation plan and strategy to do so		√		
Operational objective 1.2: Establishing, for each of the corridors, a governance structure consisting in decision-making bodies composed of the Member States and infrastructure managers concerned, ad advisory groups involving applicants (RU and non-RU applicants) and terminals	√			
Operational objective 1.3: Ensuring consistency with the trans-European Transport Network (TEN-T) and ERTMS corridors and with other EU policies, funds and institutions, such as the TEN-T fund (now the Connecting Europe Facility), the European Regional Development Fund, the Cohesion Fund, the Marco Polo Programme, the Shift2Rail Joint Undertaking as well as the European Investment Bank			√	
Operational objective 1.4: Improving interconnections with railway infrastructure of European third countries	√			
Operational objective 1.5: Ensuring that planned or implemented measures for the establishment of the freight corridors meet the needs of all users of the corridor	√			

Source: compilation of the authors

Extent to which the Regulation has contributed to the specific objective (2) of coordinating and planning investments and works to ensure that infrastructure capacities available along the corridor meet the needs of international rail freight traffic, including for interoperability and its related operational objectives

This specific objective addresses the physical infrastructure as the underlying element for the provision of the rail freight services. The capacity and capability[76] of infrastructure has a direct impact on the quality of the freight services provided as the technical characteristics have an influence on their performance. At the same time, the capacity

[76] Capacity refers to the traffic volume a network can absorb, whereas capability refers to the technical properties, such as permissible speed, electrification, loading gauge, axle load, etc.

available can be subject to temporary restrictions in order to carry out necessary works on the infrastructure and its equipment. In this respect, it is important to carefully plan and coordinate such temporary capacity restrictions in order to limit their impact on the operation of the freight services.

In general, the elements gathered from the desk and field research lead to the conclusion that the Regulation has been effective to a moderate or small extent in achieving this specific objective.

For the operational objectives, a higher level of effectiveness can be reported for those concerning the publication of (i) the information related to the schedule for carrying out medium- to long-term investment and (ii) the schedule for carrying out the works on the infrastructure and its equipment that would restrict available capacity on the freight corridor. This information on freight corridors is published in books 4 and 5 of the corridor information document, according to a common structure developed with RailNetEurope.

Table 18 presents a summary of the evaluation of the extent to which the Regulation contributed to achieving the specific objective of coordinating and planning investments as well as infrastructure works that restrict the available capacity and its related operational objectives.

Table 18: Evaluation of the extent to which the Regulation contributed to achieving the specific objective 2 of coordinating and planning investments as well as infrastructure works restricting the available capacity and its related operational objectives

Specific and operational objectives	Contribution of the Regulation			
	Large	Moderate	Small	Not at all
Specific objective 2: Coordinating and planning investments and works to ensure that infrastructure capacities available along the corridor meet the needs of international rail freight traffic		√		
Operational objective 2.1: Coordinating and planning medium to long-term investments for infrastructure, with a view to developing capability and interoperability of the infrastructure and its technical equipment and to increasing capacity available for freight trains			√	
Operational objective 2.2: Publishing the schedule for carrying out medium to long-term investment in order to ensure that applicants who may operate on the corridor are well-informed	√			
Operational objective 2.3: Coordinating the schedule for carrying out all the works on the infrastructure and its equipment that would restrict available capacity on the freight corridor		√		
Operational objective 2.4: Publishing in one place, in an appropriate manner and timeframe the schedule for carrying out all the works on the infrastructure and its equipment that would restrict available capacity on the freight corridor	√			

Source: compilation of the authors

Extent to which the Regulation has contributed to the specific objective (3) of guaranteeing international freight trains access to adequate infrastructure capacity, recognising the needs of other types of transport including passenger transport and its related operational objectives

This specific objective addresses the operational conditions of international rail freight services. For traffic management, the main challenges are (i) the generally low level of priority attributed to freight trains compared to passenger services across the Member

States (in particular in the event of disturbance) and a lack of coordination or communication between infrastructure managers.

In general, the elements gathered from the desk and field research lead to the conclusion that the Regulation has been effective to a small extent in achieving this specific objective.

As far as the operational objectives are concerned, participants in the evaluation reported a higher level of effectiveness with regard to punctuality in the event of a disturbance. The development of internationally shared procedures along the freight corridors demonstrates that initiatives have been undertaken following the adoption of the Regulation to improve the previous situation. In particular with regard to international contingency management in the event of a disturbance, the freight corridors have contributed to the development of the International Contingency Management Handbook of RailNetEurope and Platform of Rail Infrastructure Managers in Europe in 2018.

Table 19 presents a summary of the evaluation of the extent to which the Regulation contributed to achieving the specific objective of improving operational conditions for international rail freight services, in particular by coordinating traffic management and its related operational objectives.

Table 19: Evaluation of the extent to which the Regulation contributed to achieving the specific objective 3 of improving operational conditions for international rail freight services, in particular by coordinating traffic management and its related operational objectives

Specific and operational objectives	Contribution of the Regulation			
	Large	Moderate	Small	Not at all
Specific objective 3: Improving operational conditions for international rail freight services, in particular by coordinating traffic management and its related operational objectives			√	
Operational objective 3.1: Increasing the priority of freight trains in traffic management			√	
Operational objective 3.2: Improving the coordination of traffic management between infrastructure managers			√	
Operational objective 3.3: Ensuring that freight trains are sufficiently punctual in the event of disturbance		√		
Operational objective 3.4: Coordinating the use of interoperable IT applications or alternative solutions for operation of international traffic on the freight corridor			√	

Source: compilation of the authors

Extent to which the Regulation has contributed to the specific objective (4) of guaranteeing international freight trains access to adequate infrastructure capacity and its related operational objectives

This specific objective addresses the quantitative and qualitative provision of infrastructure capacity for international rail freight services. In quantitative terms, infrastructure capacity depends on the type and characteristics of the physical infrastructure, or on the services for (and priority given to) passenger trains. In qualitative terms, infrastructure capacity depends on the characteristics of the paths offered and the level of performance that the paths can ensure.

In general, the analysis of the elements gathered from the desk and field research lead to the conclusion that the Regulation has been effective to a moderate or small extent in achieving this specific objective.

The more critical aspect stemming from the evaluation is related to the operational objective of increasing the quantity and quality of infrastructure capacities allocated to freight traffic by defining and reserving internationally coordinated train paths of high quality in terms of commercial speed and reliability based on the results of a transport market study. The findings of the desk and field research identified a lack of both quantity and quality of infrastructure capacity.

The reason why freight corridors have not been successful in increasing the quantity of infrastructure capacity for international freight traffic are as follows.

First, there is a wide consensus among railway undertakings that the capacity products and allocation process offered by freight corridors are not in line with the actual needs expressed by freight operators. The evidence gathered shows that railway undertakings do not know very far in advance when a freight train will be run and which stations will be used for stops. In general, railway undertakings submit a request for a train path when the production process is more concrete and the contractual conditions with the end customer have been defined with certainty.

A related important aspect preventing railway undertakings from submitting requests for the capacity products of freight corridors (i.e., pre-arranged paths and reserve capacity), hence hampering the quantity of capacity offered, is a general lack of flexibility of the paths offered. To adhere more to the needs expressed by the market, the initial pre-arranged path product has evolved into a more flexible solution. However, it has not been developed by the freight corridors in a harmonised way; rather, it consists of a basket of pre-constructed products with various ranges of flexibility.

Second, users believe that the IT tool used by the freight corridors for offering, requesting and allocating paths (i.e., the path coordination system) does not offer all the necessary functionalities or is not sufficiently user-friendly. This is also due to missing interfaces between the paths coordination system and infrastructure managers' systems. The railway undertakings have expressed a preference to use the well-known and – for them – easier systems of the national infrastructure managers. Smaller railway undertakings report that they use the path coordination system only if unavoidable.

Third, the scope of the capacity services offered by freight corridors is considered to be too narrow. The phases of the allocation process within the remit of corridor one-stop shops focus on the design of the capacity, from the requests expressed by the market to the allocation of the offer in agreement with the concerned infrastructure manager(s). The subsequent phases are outside the remit of corridor one-stop shops, although they can determine substantial modifications to the paths with respect to the initial capacity offered.

As far as the quality[77] of the infrastructure capacity for international freight traffic is concerned, the capacity products of the freight corridors are viewed as moderately better compared to the products of the infrastructure managers in terms of transparency,

[77] The notion of quality of infrastructure capacity is rather complex as it combines properties both of a product (i.e., the train path itself) and of a service (i.e., related to the process and the tools). For the purpose of this evaluation support study, nine criteria were identified and evaluated in terms of their relevance, namely: transparency, certainty, uniformity, availability, flexibility, performance, harmonisation, customisation and resilience.

availability and harmonisation. As for the other, more relevant, quality criteria such as flexibility and performance, railway undertakings do not find any difference, which implies that they do not have an actual incentive, in terms of quality of the product, to submit requests for capacity via the freight corridors. In this respect, evaluating the performance of the freight trains (i.e., measured in terms of real average commercial speed), the data provided by RailNetEurope and used to define the evaluation baseline, confirm that there is no significant difference between the pre-arranged paths of the freight corridors and other paths.

As noted in evaluation question 5, the transport market study is considered to be a useful tool to identify the volumes of freight that can be attracted by the freight corridor and potentially bring new customers. However, the crucial step of translating identified volumes of international freight into pre-arranged train paths has largely not been undertaken by the freight corridors. The responses gathered from the consultation show that the freight corridors did not develop the capacity offered on the basis of the transport market studies, essentially because the providers of rail freight services do not have an actual incentive to request pre-arranged paths.

Table 20 presents a summary of the evaluation of the extent to which the Regulation contributed to achieving the specific objective of guaranteeing international freight trains access to adequate infrastructure capacity and its related operational objectives.

Table 20: Evaluation of the extent to which the Regulation contributed to achieving the specific objective 4 of guaranteeing international freight trains access to adequate infrastructure capacity and its related operational objectives

Specific and operational objectives	Contribution of the Regulation			
	Large	Moderate	Small	Not at all
Specific objective 4: Guaranteeing international freight trains access to adequate infrastructure capacity		√		
Operational objective 4.1: Increasing the quantity and quality of infrastructure capacities allocated to freight traffic by defining and reserving internationally coordinated train paths of high quality in terms of commercial speed and reliability based on the results of a transport market study			√	
Operational objective 4.2: Ensuring a quick and appropriate response to *ad hoc* requests for capacity by defining and reserving internationally coordinated train paths of high quality in terms of commercial speed and reliability based on the results of the transport market study			√	
Operational objective 4.3: Promoting the coordination of priority rules relating to capacity allocation along the corridor		√		

Source: compilation of the authors

Extent to which the Regulation has contributed to the specific objective (5) of facilitating the use of rail infrastructure for international rail freight services, supporting fair competition between rail freight services and monitoring the performance of rail freight services of the corridors and its related operational objectives. Specifically, for monitoring the performance of the rail freight services, what are the follow-up measures implemented

This specific objective focuses on the excessive and avoidable administrative burden for railway undertakings to request international train paths in national sections at the one-stop shop of individual infrastructure managers.

In general, the elements gathered from the desk and field research lead to the conclusion that the Regulation has been effective to a moderate or small extent in achieving this specific objective.

With respect to the need to establish the corridor one-stop shop as the single interface between infrastructure managers and railway undertakings to facilitate the timetabling and international capacity management process, the stakeholders believe that the single interface is necessary but that it might be implemented in another, more effective, form.

In this respect, the elements stemming from the analysis conducted indicate that stakeholders believe that corridor one-stop shops are ineffective for two reasons.

First, the structure of the freight corridors necessarily implies the existence of connecting sections, overlapping sections and diversionary and connecting lines. This structure means that the corridor one-stop shop is responsible for addressing several issues simultaneously, from capacity coordination to traffic management. Second, only one resource per freight corridor is appointed as a corridor one-stop shop manager, a situation which limits the capability to carry out the activities when in charge and the continuity of the service in the case of their absence.

Concerning access to information, there is a rather mixed view about the added value of documents provided by the freight corridors. In general, the information that is gathered from other primary sources, which is merely duplicated by the freight corridors (i.e., information on infrastructure investments, the deployment of interoperable systems and the schedule for carrying out all the works on the infrastructure and its equipment), is considered to provide only a small or no added value.

Conversely, information that directly stems from the scope of activities of the freight corridors is seen as adding a large or moderate value for the planning and operation of rail freight services. The documents in question are those reporting on available capacity, on the activities of the corridor one-stop shop, on the framework for the allocation of infrastructure capacity and the corridor information document.

Finally, in terms of creating conditions favourable to the development of competition between rail freight service providers, including the definition of a role for the regulatory bodies, the evidence shows that their role has been marginal until now and that they have contributed to achieving the objectives of the Regulation only to a small extent or not at all.

Table 21 presents a summary of the evaluation of the extent to which the Regulation contributed to achieving the specific objective of improving operational conditions for international rail freight, in particular by coordinating traffic management along the corridors, including the event of disturbance and monitoring the performance of rail freight services of the corridors, and its operational objectives.

Table 21: Evaluation of the extent to which the Regulation contributed to achieving the specific objective 5 of facilitating the use of rail infrastructure for international rail freight services, supporting fair competition between rail freight service providers and monitoring the performance of rail freight services of the corridors, and its operational objectives

Specific and operational objectives	Contribution of the Regulation			
	Large	Moderate	Small	Not at all
Specific objective 5: Facilitating the use of rail infrastructure for international rail freight services, supporting fair competition between rail freight service providers and monitoring the performance of rail freight services of the corridors. Specifically, for monitoring the performance of the rail freight services, what are the follow-up measures implemented		√		
Operational objective 5.1: Facilitating requests for infrastructure capacity for international freight services by setting up a joint body to request international train paths in a single place and operation (the one-stop shop') and by coordinating the use of interoperable IT applications or alternative solutions to handle requests for international train paths and the operation of international traffic on the freight corridor			√	
Operational objective 5.2: Facilitating access to information concerning the use of all the main infrastructure on the freight corridor		√		
Operational objective 5.3: Creating conditions favourable to the development of competition between rail freight service providers, including by defining a role for regulatory bodies, strengthening their competition within the RFC in guaranteeing non-discriminatory access			√	

Source: compilation of the authors

Extent to which the Regulation has contributed to the specific objective (6) of improving intermodality along the corridors and its related operational objectives

Intermodal transport constitutes a dynamic segment of the rail freight market. Providing rail freight service operators with a sufficient number of intermodal facilities and quality services is a key factor to develop this strategically important segment.

In general, the elements gathered from the desk and field research lead to the conclusion that the Regulation has been effective to a small extent in achieving this specific objective.

The activities implemented are compliant with the provision of the Regulation requiring freight corridors to provide information regarding the terminals on the freight corridor and their characteristics. However, beyond this information requirement, the actions the freight corridors can take for the development of the terminals are relatively narrow because of (i) the limited scope of action of the freight corridors in investment planning and (ii) the governance structure inside the terminals, which is a complex and context-specific.

With respect to the effectiveness of the freight corridors in improving access to the terminals, stakeholders judged their role to be slightly or not at all effective. However, the field research does not suggest a common view as different opinions have been voiced either on the basis of experience in context-specific situations, or suggesting that the coordination of the allocation of capacity could be left out of the scope of the activities of the freight corridors.

In general, the terminal slots are allocated at relatively short notice (e.g., four weeks), as was pointed out by an infrastructure manager and railway undertaking. This alleged that it was the view of terminal operators that, for small ports and terminals, there is no actual need to ensure the coordination of the allocation of the capacity between infrastructure managers and terminals as they can also manage requests on a day-to-day basis. The coordination of the capacity could be implemented for larger ports where a capacity problem may exist; however, according to the information gathered from the stakeholder consultation, the process of preparing freight trains is complex and the departure time from a port cannot be predicted precisely, as it depends on the arrival time of a ship from another port, which is in turn influenced by sea and weather conditions.

Ports and terminal operators reported that another underlying aspect is the fact that the information about the position of a train running on the network is not always sufficiently reliable. The evidence gathered from the field indicates that the situation has improved in recent years thanks to new tracking and tracing tools, particularly for two freight corridors. However, although they were aware of such developments, some ports have not joined the initiatives and prefer their own tools to be used in cooperation with the national infrastructure manager.

This situation limits the possibility to effectively coordinate at the corridor level the capacity between infrastructure and terminals and also highlights the fact that a relationship exists between the coordination of the capacity and the operations on both sides. The reliability of the estimated time of departure or arrival is a crucial element for ensuring that the planned coordination of the capacity allocated is met once in operation.

Despite these issues, an attempt to coordinate capacity with terminals has been developed by the Scandinavian - Mediterranean freight corridor, together with the terminal of Verona Quadrante Europa (Italy). The Terminal Integrated Capacity Offer provides, as part of the capacity catalogue of the freight corridor, free terminal slots and terminal slots coordinated with the pre-arranged paths. The Baltic - Adriatic freight corridor intends to follow this pilot project and evaluated that such approach would not have been possible without the Regulation being implemented.

The need to improve the end-to-end performance management (i.e., estimated time of arrival and tracking and tracing systems) and freight trains' punctuality is mentioned in a number of written contributions. Overall, the stakeholders evaluate that the Regulation has been slightly effective in improving traffic management at the interface between railway infrastructure and terminals and that they would support the idea of a superordinate platform with information on all trains, including their estimated time of arrival, delays and free slots.

With respect to the initiative already undertaken at the freight corridor level, some ports have reported that they are aware of such initiatives but also that, they did not join them as the development of projects in cooperation with the national infrastructure manager is preferred.

Table 22 presents a summary of the evaluation of the extent to which the Regulation contributed to achieving the specific objective of improving intermodality along the freight corridors and its operational objectives.

Table 22: Evaluation of the extent to which the Regulation contributed to achieving the specific objective 6 of improving intermodality along the corridors and its operational objectives

Specific and operational objectives	Contribution of the Regulation			
	Large	Moderate	Small	Not at all
Specific objective 6: Improving intermodality along the corridors			√	
Operational objective 6.1: Taking into account the development of terminals to meet the need of rail freight traffic for intermodal nodes			√	
Operational objective 6.2: Ensuring coordination of the allocation of capacity between infrastructure managers taking into account access to terminals			√	
Operational objective 6.3: Ensuring coordination between the operation of railway infrastructure and terminals			√	

Source: compilation of the authors

Extent to which the Regulation has made the development of rail freight transport and a modal shift from road to rail possible

Long-term trends of freight transport activity as per the Eurostat database show that road transport is the dominant inland mode across Member States, except for the Baltic states of Latvia and Lithuania. Also, between 2007 and 2016, the modal shares of road, rail and inland waterways has remained almost unchanged at around 76%, 17% and 7%, respectively (measured in tonne-km). Specifically, referring to the modal share of rail freight, the data analysed show that for the vast majority of Member States, it has reduced between 2011 and 2017.

Despite the share of rail freight being unchanged throughout the period, the estimation developed in Pastori et al. (2018) shows that for freight transport of distances over 300 km, the share of the road mode is smaller compared to the overall average value (i.e., 56-58% against 76%) and that of rail freight is significantly bigger (i.e., 37-39% against 17%).

Also, the data of the Commission's sixth report on monitoring the development of the rail market shows that around 50% of total rail freight activity is international, which highlights the strong European dimension of rail freight transport and the fact that it is particularly sensitive to improvements of infrastructure interoperability and cooperation between national infrastructure managers.

Elements to evaluate the extent to which the Regulation has enabled the development of rail freight and a modal shift from road can be elicited by analysing the relevant segments of rail freight transport. The analysis developed in the context of the definition of the evaluation baseline[78] showed that the international intermodal rail freight segment[79] has been increasing between 2010 and 2017, and also that the trend is comparable to that of international road freight transport. Both trends are broadly in line with that of the gross domestic product at EU27 level.

[78] See chapter 4 of this report and Annex G.

[79] Intermodal means a cargo carried in load units such as containers, swap bodies, or semi-trailers.

Intermodal transport emerges as a suitable segment for international transport when also analysing the distribution of the volumes transported by distance segment (measured in tonne-km). In this respect, the data of the International Union for Road-Rail Combined Transport show that (i) intermodal units are almost entirely transported over distances longer than 300 km and (ii) the distance segment over 900 km has increased significantly since 2013.

As regards the freight corridors, intermodal transport was identified as an important segment in early transport market studies[80]. Train performance manager experts of the freight corridors also consider intermodal transport to be an important segment given that most of the freight trains running on pre-arranged train paths are intermodal and the pre-arranged paths are more suitable for intermodal transport because this type of transport service can be scheduled.

Conclusions

In order to evaluate the extent to which the general, specific and operational objectives of the Regulation have been achieved, the main findings described throughout the previous sections illustrate the key conclusions arising from the analysis.

With respect to the extent to which the Regulation has made possible the development of rail freight transport and a modal shift from road to rail possible, some quantitative elements of the analysis suggest that the observed positive trend of the international intermodal rail transport segment might, to some extent, be related to the implementation of the Regulation.

That said, it is worth observing that:

- the definition of the evaluation baseline has shown that isolating the changes linked to the implementation of the Regulation is a challenging exercise, as exogenous factors may be involved;
- according to the evaluation of the extent to which the general, specific and operational objectives have been achieved by the Regulation, the effectiveness of the activities within the scope of the freight corridors was assessed as being moderate or small for the majority of cases. A higher level of effectiveness is found for activities related to the coordination between stakeholders and the provision of information on corridor characteristics and status. However, the effectiveness of these activities in terms of the development of rail freight and modal shift cannot be quantified.

A rough quantitative estimation of the possible development of rail freight transport has been developed in the context of the definition of the evaluation baseline.

The data made available by RailNetEurope have allowed the development of a comparison of the performance of freight trains running on pre-arranged train paths with respect to other paths. The analysis suggests that the observed difference of commercial speed could have generated an increase in the number of international freight trains in the range 0-3%, if one considers the minimum and the maximum estimated difference. Despite a lack of data that allows a consistent trend of the number of freight trains before and after the

[80] The intermodal segment of the Rhine-Alpine, Scandinavian-Mediterranean and North Sea-Baltic freight corridors was between 36% and 89% of the total international trains between 2010 and 2012.

implementation of the Regulation to be drawn up, it can be assumed that the effect of the Regulation could be of the same order of magnitude as for the other freight corridors.

5.2.3. EQ.7: Which side effects have materialised, both positive and negative? Which external and internal factors and developments have contributed to the achievement of the objectives of Regulation 913/2010, both positively and negatively?

Introduction

The Regulation implies, both in its preambles and in its articles, a number of general, specific and operational objectives, which – in broad terms – aim to improve the conditions for international rail freight services.

This evaluation question identifies which factors and developments have either negatively or positively contributed to achieving the objectives of the Regulation. The analysis has been developed mainly by relying on the evidence collected from desk and field research. A detailed presentation of the main findings by sub-question is provided in Annex I[81].

Main findings

Side effects

The opinions gathered from the stakeholders' consultation are quite unanimous in that they believe that the Regulation has had a positive impact in developing a Europe-wide railway community to share interests and knowledge and to improve the exchange of best practices and experiences, as well as to enhance coordination and harmonise approaches. The stakeholders also believe that the implementation of the Regulation improved the level of responsibility and transparency in delivering information and outcomes to the Commission, the national authorities and ultimately the customers.

This collaborative environment triggered a lively cooperation materialising in (i) a common framework for the allocation of infrastructure capacity (see also Article 14), (ii) the corridor one-stop shop community for the exchange of best practices, (iii) working groups established on common topics between the freight corridors and (iv) a collaborative corridor one-stop shop model for capacity allocation of the overlapping sections between the Orient/East-Med and the North Sea-Baltic freight corridors. In parallel, the establishment of the freight corridors also induced the development of a number of harmonised guidelines and common specifications elaborated by RailNetEurope.

Additional positive side effects of the Regulation are as follows.

- First, the project "The Rail Technical Operational Issues Logbook" (i.e., the "Issues Logbook") launched in 2017[82] to list and review the technical issues causing significant problems to cross-border rail operations and develop suitable actions for improvements. This compilation of issues allows tasks to be assigned to relevant stakeholders and avoids a duplication of work on the same problems through separate channels.
- Second, the project "Redesign of the International Timetabling Process" was initiated in 2017 to simplify, unify, and solidify improvements to the European rail

[81] See section I.2.3.

[82] The project was launched under the Connecting Europe Facility Multi-annual programme 2014.

timetabling system. A systematic redesign of the timetabling processes has been identified to be necessary because the approaches to timetabling differ substantially between countries. This makes international cooperation difficult, especially in relation to the need for (i) optimising the deadlines to submit path requests (notably for *ad hoc* paths) and (ii) improving the reliability, consistency and stability of planning, taking into account infrastructure works involving temporary capacity restrictions.

On the other hand, some negative side effects have also emerged with respect to the general objectives.

With respect to the general objective of improving the coordination between infrastructure managers and other stakeholders, the management boards of the freight corridors evaluate that the added value of the freight corridors is not readily apparent and requires a clearer allocation of roles, especially to prevent infrastructure managers from perceiving the freight corridors as an extra layer tasked with overlapping activities.

Other tasks are considered to overlap with the activities carried out at the core network corridor level. The position papers of two freight corridors point out that the implementation plan at the freight corridor level (and its investment plan) should be developed in coordination with the core network corridors, the infrastructure managers and the Member States to avoid a duplication of work. Likewise, for the transport market study, the view of management boards is that this should be developed at the core network corridor level and then shared with the freight corridors, acting as modal experts.

In addition, as regards coordination, the railway undertakings and terminal managers and owners point out that the Regulation may have increased the level of bureaucracy because both the freight corridors and RailNetEurope are entities without a clear role and executive decision-making rights compared to the infrastructure managers.

As far as the simplification of the use of rail infrastructure is concerned, the pre-arranged paths are considered to be an inefficient use of capacity, fragmenting the volume available for international freight services and requiring a parallel allocation process. The position of the railway undertakings is unanimous in considering this to be a negative side effect. The railway undertakings also state that the IT tool for the path coordination system, which is used to submit path requests at the freight corridor level, does not meet market needs (especially for *ad hoc* paths) and involves an extra allocation process.

Internal and external factors

Internal factors

Internal factors that can be linked with the objectives of the Regulation are inherited from EU legislation. They stem from (i) the Commission Delegated Decision (EU) 2017/2075 replacing Annex VII to Directive 2012/34/EU, (ii) the Regulation 2015/429 on noise differentiated track access charge schemes and (iii) the Implementing Regulation (EU) No 2017/2177 on access to service facilities and rail-related services.

As regards the Delegated Decision (EU) 2017/2075 replacing Annex VII to Directive 2012/34/EU[83], it introduced new deadlines and a bilateral process for the coordination of

[83] See also Commission delegated decision (EU) 2017/2075 of 4 September 2017, replacing annex VII to Directive 2012/34/EU of the European Parliament and of the Council establishing a Single European railway area.

international temporary capacity restrictions as the responsibility of infrastructure managers. However, this has generated an overlap with the Regulation and limits the scope of the freight corridors on this activity. There is a common opinion across the members of the governance bodies of the freight corridors, as provided in written contributions and throughout the consultation, that a clarification of the responsibility of the temporary capacity restrictions to improve coordination between Regulation (EU) No 913/2010 and the Annex VII of Directive 2012/34/EU is necessary.

Rail noise is a relevant issue for rail freight transport, but the implementation of Regulation 2015/429 on noise differentiated track access charge schemes has had a limited impact on incentivising the retrofit of noisy freight wagons and has not led to a broad adoption of noise differentiated track access charge schemes by the Member States[84]. This is an aspect worth considering for the specific objective of facilitating the use of rail infrastructure and supporting competition between rail freight service providers, with a view to avoiding the negative effects of (i) uncoordinated national unilateral actions to incentivise the retrofitting of wagons and (ii) restrictions on use the existing wagon fleet that influences the competitive position of different actors within the rail sector.

The Implementing Regulation (EU) No 2017/2177 defines in detail the procedure and criteria for the access to service facilities and services to be supplied by the service operators. In particular, Article 7 requires the operators of ports and terminals and infrastructure managers to cooperate on to ensure consistent capacity allocation and traffic management.

External factors

In order to give sufficient priority to rail freight, infrastructure managers of some Member States reported actions to increase the quantity and quality of the capacity available; however, a negative influencing factor lies in the fact that the networks are designed for mixed traffic and infrastructure investments are not specifically aimed at rail freight.

The need to coordinate the use of interoperable IT applications or alternative solutions for the operation of international traffic on the freight corridor is related to the general objective of simplifying the use of rail infrastructure. Four Member States reported the deployment of digital traffic management systems supporting efficiency, reliability and punctuality of train operations.

Innovative digital solutions and the automation of operations are external factors that may positively influence the potential of intermodality along the freight corridors. Across the logistics network, a digital innovation wave and the improved automation of operations are changing previous practices. Terminals are better positioned to play a key role in the digitalisation of the supply chain and, for example, ports are testing and implementing new systems and innovations aimed at more efficient operations.

The type of cargo transported by rail has been changing over the past years, with the intermodal segment growing above average and in line with the general trend of the economy. Train performance manager experts of freight corridors share the opinion that most of the freight trains running on pre-arranged paths are intermodal, because this type

[84] According to the evaluation support study (Ricardo and TRT (2019)) NDTAC schemes have been implemented only in Austria, Germany and the Netherlands (and Switzerland outside the EU). The NDTAC schemes of Germany, the Netherlands and Switzerland were already in place before the Regulation and only Austria has created one after the implementation of the Regulation 2015/429.

of transport service can be scheduled in advance. This suggests that an external change of the structure of the market may have a positive effect for achieving the general objective of strengthening the integration of rail freight multimodal transport.

The joint position paper of the umbrella associations of sea and inland ports considers the rail network of the ports to be an important link between the private sidings on the quay side and the national railway network, but it also states that the last-mile connection is often characterised by old infrastructure and outdated equipment creating a bottleneck to access to the port area and ultimately a negative external factor for multimodal freight operations.

Conclusions

The side effects and internal and external factors identified show both positive and negative impacts with respect to the general objectives of the Regulation.

As Table 23 shows, the side effects identified mainly concern the objective of improved coordination between infrastructure managers and other stakeholders. Compared to the situation without the Regulation being implemented, international rail freight has benefited from the creation of a community that shares interests and knowledge, exchanges best practices and harmonises its approaches. On the other hand, the activities of the freight corridors overlap to some extent with analogous tasks of the core network corridors and infrastructure managers.

The concerned stakeholders perceive that the Regulation has not simplified the use of the rail infrastructure and that it fragmented the allocation of international capacity and created an extra process for the submission of path requests.

Table 24 shows that a positive internal factor can be identified in relation to the objective of improving coordination between infrastructure managers and other stakeholders and this refers to Annex VII of Directive 2012/34/EU. In terms of giving sufficient priority to rail freight traffic to meet freight market needs, a negative external effect exists in the fact that the railway infrastructure is inherently designed for mixed traffic.

The achievement of the general objective of simplifying the use of rail infrastructure is influenced internally in negative terms by unilateral national actions restricting the access of noisy wagons to the infrastructure. On the external side, the effect can be positive thanks to the deployment of national digital traffic management systems and a digital innovation wave for the automation of the operations of ports and terminals.

Finally, the factors strengthening the integration of rail freight multimodal transport are identified as external. These are positive, if driven by the Implementing Regulation (EU) No 2017/2177 and the observed evolution of the market towards more transport of intermodal units, or negative, if influenced by the poor conditions of last-mile infrastructures and equipment.

Table 23:Side effects identified with respect to the general objectives

Impact	General objective of the Regulation			
	Improving coordination between infrastructure managers and other stakeholders	Giving sufficient priority to rail freight traffic to meet freight market needs	Simplifying the use of the rail infrastructure	Strengthen the integration of rail freight multimodal transport
Positive	• Set up of a community to share interest and knowledge • Exchange of best practices and experiences • Enhanced harmonisation of the approaches • Improved responsibility and transparency	-	-	-
Negative	• Overlap of activities with infrastructure managers • Increased the level of bureaucracy	-	• Fragmentation of the international capacity • Path coordination system created an extra allocation process	-

Source: compilation of the authors

Table 24: Internal and external factors identified with respect to the general objectives

Impact	General objective of the Regulation			
	Improving coordination between infrastructure managers and other stakeholders	**Giving sufficient priority to rail freight traffic to meet freight market needs**	**Simplifying the use of the rail infrastructure**	**Strengthen the integration of rail freight multimodal transport**
Positive	**Internal** • Annex VII of Directive 2012/34/EU introduced new deadlines and bilateral process for coordination of international temporary capacity restrictions in the responsibility of the infrastructure managers	-	**External** • Four Member States reported the deployment of digital traffic management systems • Digital innovation wave and the improved automation of the operations of ports and terminals	**Internal** • The Implementing Regulation (EU) No 2017/2177 defines in detail the procedure and criteria for the access to service facilities and services to be supplied by the service operators **External** • Intermodal rail segment growing and important for the freight corridors considering that freight trains running on pre-arranged paths are mostly intermodal
Negative	-	**External** • Railway networks designed for mixed traffic and investments not specifically targeted for freight	**Internal** • Uncoordinated national unilateral actions to incentivise retrofitting of noisy wagons and restrictions to use the existing wagons could influence the competitive position of the operators	**External** • Last-mile connection often characterised by old infrastructures and outdated equipment

Source: compilation of the authors

5.2.4. EQ.8: How effective has the cooperation and coordination between the governance structure of the RFCs and related institutions and structures been, including in particular the European Union Agency for Railways, the TEN-T core network corridors, the Single European Rail Area Committee (SERAC), the Platform of Rail Infrastructure Managers in Europe (PRIME), the railway undertakings Dialogue (RU Dialogue), the S2R Joint Undertaking, the Digital Transport and Logistics Forum as well as relevant sector-driven groups?

Introduction

This evaluation question addresses the extent to which institutions and structures have been engaged by the governance structure of the freight corridors (i.e., executive board and management board) in the process of implementing the provisions of the Regulation.

To respond to this question, a qualitative analysis was developed by reviewing the information gathered from the desk and field research and regarding the initiative, measures and actions undertaken since the Regulation has entered into force. The initiatives, measures and actions identified are evaluated in terms of the extent to which they have been effective in the process of implementation of the provisions of the Regulation.

A detailed presentation of the main findings by sub-question is provided in Annex I[85].

Main findings

Although the governance structures of the freight corridors have actively implemented the provisions of the Regulation, a relatively narrow scope of institutions and entities has been engaged. The activities of coordination and cooperation have been mainly conducted at the institutional level and with institutions and entities of the railway industry. Few other activities can be reported with entities outside of the railway industry, either with other transport modes or with completely different fields.

Table 25 presents the overview of the institutions and entities engaged by the freight corridors.

Table 25: Overview of institutions and entities engaged by the freight corridors

Category	Institution and entity
Institutional	• Single European Railway Area Committee • Core Network Corridors
Entity within the railway industry	• European Railway Agency • Union internationale des chemins de fer • Platform of Rail Infrastructure Managers in Europe • Independent Regulators' Group – Rail • Railway Undertakings of Dialogue (RU Dialogue) of the European Rail Freight Association • Shift2Rail Joint Undertaking • Organisation for Cooperation between Railways
Entity outside the railway industry	• Digital Transport and Logistics Forum • Eurocontrol • North Atlantic Treaty Organization

Source: compilation of the authors

[85] See section I.2.4.

In general, cooperation and coordination initiatives have been initiated both by the freight corridors' governance structure towards other entities and vice versa. The stakeholders report that certain other entities have not been engaged, for instance the customers of rail freight services, the authorities in charge of railway safety and entities active in the field of rail research and innovation.

Measures and actions developed at institutional level

Although the Commission has no formal role in the governance structure of the freight corridors, executive board and management board members attend the meetings of the working group of the freight corridors established by the Single European Railway Area Committee. The meetings are organised by the Directorate-General for Mobility and Transport.

Cooperation has been established with the core network corridors, according to Article 48 of Regulation (EU) 1315/2013, in order to avoid any duplication of activities, in particular in relation to establishing the work plan or setting up working groups. The cooperation with the governance structures of the core network corridors is documented in the annual reports of the freight corridors.

With respect to the action undertaken with the core network corridors, the position paper of an umbrella association of railway undertakings reports that:

- on the Scandinavian–Mediterranean freight corridor, the core network corridor coordinator analysed in depth the requirements of railway undertakings for dedicated working groups and derived suggestions for freight; and
- on the Orient/East-Med freight corridor, the core network corridor coordinator introduced a working group to analyse the border processes, especially the reasons for longer train stops at the border, with the aim of improving border processes.

As noted earlier, in evaluation question 7, "The Rail Technical Operational Issues Logbook" was launched by the Commission in 2017. Within this project, it is worth noting that the freight corridors are encouraged to support and facilitate a dialogue between stakeholders in order to find ideas for language pilot projects for the Train Drivers Directive. The pilot projects are intended to give railway undertakings the possibility of exploring alternative options to the current language requirements.

Measures and actions developed with entities within the railway industry

The European Railway Agency has been involved in specific activities of the freight corridors. The National Safety Authority working group of the Rhine–Alpine freight corridor developed a common understanding of technical issues related to the European Rail Traffic Management System for achieving a common standard on the freight corridor. Issues identified by the working group that cannot be resolved at the freight corridor level, or which might have a broader impact, are addressed to the European Railway Agency.

With respect to the cooperation with the European Railway Agency, RailNetEurope also liaises closely with this entity, notably in the field of the Technical Specification for Interoperability relating to Telematics Applications for Freight and Passenger Services. This activity aims to define the data exchange between individual infrastructure managers and between infrastructure and railway undertakings.

Following the Rastatt incident in 2017, one of the most important initiatives involving the freight corridors was set up with RailNetEurope and the Platform of Rail Infrastructure Managers in Europe, namely the International Contingency Management Handbook. Based on the follow-up discussions with many market stakeholders, the International Contingency Management Handbook was revised in meetings of the Platform of Rail

Infrastructure Managers in Europe and members of the RU Dialogue and in meetings with infrastructure managers and freight corridors coordinated by RailNetEurope. It is worth mentioning that the effectiveness of the International Contingency Management Handbook was analysed by the Mediterranean freight corridor following the disruption that occurred in Modane (France) in 2019.

With respect to cross-border issues, the Union internationale des chemins de fer has set up the Efficient Cross Corridor Organisation. Meetings are organised between this group and the freight corridors on how to make these work better in relation to international rail freight.

Interestingly, the Union internationale des chemins de fer published the "railway undertakings' Handbook for International Contingency Management" in 2019, including a checklist of tasks in the event of a disruption, and recognising the role the freight corridors can play in setting up the communication process to best handle the International Contingency Management Handbook. The Scandinavian – Mediterranean freight corridor also remarked on the importance of this initiative during the meetings held in 2019 with the Commission and the speakers of the railway undertakings advisory groups of the other freight corridors, saying that all parties should be actively involved to ensure that mitigation measures are put in place immediately and rerouting options can be explored and adopted.

With respect to cooperation with the freight corridors, the Independent Regulators' Group – Rail organised a forum on the development of the freight corridors in 2017 to exchange views on monitoring approaches for the rail freight corridors, which offered the possibility of highlighting topics concerning the freight corridors, focusing on market demands, experiences and developments. The second forum in 2018 focussed on the quality of freight corridors.

It is also interesting to note that after the establishment of the freight corridors, the Independent Regulators' Group – Rail published guidelines on the monitoring of rail freight corridors in 2013 and a position paper providing initial thoughts on the revision of the Regulation in 2015.

As regards the Organisation for Cooperation between railways, a cooperation with the North Sea–Baltic freight corridor was explored between 2014 and 2016. As the Organisation for Cooperation between railways is active on international rail transport, the cooperation was started following the development of its own idea on freight corridors and aimed at mutual cooperation, an exchange of experiences and information. Improvements of international rail freight transport were considered between eastern Europe, Belorussia, Ukraine and Central Asia.

There are no specific actions taken between the freight corridors and Shift2Rail.

Measures and actions developed with entities outside the railway industry

The Digital Transport and Logistics Forum is a group of experts in the field of transport and logistics. Subgroup 2 of Digital Transport and Logistics Forum provides recommendations and support for the development of interoperable digital information systems to optimise cargo flows along transport corridors. The proposed measures aim to increase the interoperability and interconnectivity of digital systems and services across all Trans-European Network – Transport corridors.

In addition, the Rhine–Alpine freight corridor:

- developed in 2019, the "Quality Charter" project and organised a meeting between its representatives and Eurocontrol. The aim was to discuss the use of the collaborative decision-making airport methodology in the rail freight sector;
- was approached by the Support and Procurement Agency of the North Atlantic Treaty Organization to identify more efficient and effective ways for the nations of the organisation to gain access to and use of the European international railway network for the transport of military equipment and supplies.

Conclusions

Table 26 summarises the initiatives, measures and actions developed with other institutions and entities in the process of the implementation of the provisions of the Regulation. In addition, Table 26 indicates the provisions of the Regulation involved and provides a qualitative evaluation of the extent to which they have been effective in the process of the implementation of that provision on the basis of the information gathered from the desk and field research.

The initiatives, measures and actions have mainly focussed on the provisions related to traffic management (Article 16) and traffic management in the event of a disturbance (Article 17). The cooperation also addressed the provisions on the criteria for further freight corridors (Article 4) and the quality of service (Article 19). For the cases for which a qualitative evaluation can be provided, the initiatives, measures and actions are considered to be effective to a large or moderate extent.

Table 26: Extent of the effectiveness of initiatives, measures and actions developed with other institutions and structures with respect to the provisions of the Regulation

Provision of the Regulation involved	Initiative, measure and action	Effectiveness in the process of implementation
Article 4 Criteria for further freight corridors	Cooperation with Organisation for Cooperation between railways	Not known
Article 16 Traffic management	Rail Technical Operational Issues Logbook	Large extent
	Union internationale des chemins de fer Efficient Cross Corridor Organisation	Not known
	Quality Charter project with Eurocontrol	Not known
	Core network corridor coordinator on the necessities of the railway undertakings	Not known
	Core network corridor coordinator on border processes and especially for reasons for longer train stops at the border	Moderate extent
Article 17 Traffic management in the event of disturbance	RailNetEurope and Platform of Rail Infrastructure Managers in Europe on the Handbook for International Contingency Management	Large extent
	Union internationale des chemins de fer railway undertakings' Handbook for International Contingency Management	Large extent
Article 19 Quality of service	Independent Regulators' Group – Rail	Not known
-	Support and Procurement Agency of the North Atlantic Treaty Organization	Not known

Source: compilation based on the main findings

5.2.5. EQ.9: Have the tools provided for by the Regulation (e.g. the corridor one-stop shops, the pre-arranged train paths, the framework for the allocation of the infrastructure capacity) produced the intended effects?

Introduction

Different aspects concerning the freight corridors are addressed in this evaluation question, which aims at evaluating whether the tools provided by the Regulation have produced the intended effects.

In particular, this evaluation question is aimed at exploring to what extent the tools of the Regulation have contributed to achieving its objectives with respect to the provisions related to (i) the implementation of the freight corridor (Article 9), (ii) the investment in the freight corridor (Articles 11 and 12) and (iii) the management of the freight corridor (Articles 13 to 20).

Evidence to respond to this evaluation question are drawn from desk research and complemented by findings from (i) the stakeholder consultation (i.e., surveys and interviews) and (ii) the topical case studies. A detailed presentation of the main findings by sub-question is provided in Annex I[86].

Main findings

The analysis of the available evidence developed with regard to these provisions shows that the tools of the Regulation are considered to have been only partly effective, i.e. in producing the intended effects, and mainly only to a small extent (see also Table 27).

With respect to the measures to implement the freight corridors, the evaluation analysed the extent to which the provisions have allowed the development of a sufficient governance structure to implement the rail freight corridors. The main findings are as follows:

- The implementation plan provides the management board members with the broadest scope of tools for the implementation of the freight corridors, and the rather mixed evaluation is based on the perceived appropriateness of the instruments to achieve the objectives. The most appropriate tools are those to which the management boards of the freight corridors can effectively contribute, playing the role of a coordination body at the international level. The less appropriate tools are those for which the governance body is tied to the rules and decisions of the infrastructure managers.
- The Regulation provides the executive board members with tools to supervise and provide guidance for the implementation of the freight corridors. The evaluation has shown that their contribution in this sense has not yet been effective. The executive boards are generally hesitant to take decisions and behave more like a consultation board. National interests seem to prevail and generate obstacles throughout the decision-making process.
- The Regulation provides the regulatory bodies with control functions that are considered to be clear and coherently in place for the areas of competition and non-discriminatory access to infrastructure capacity. However, the process is being implemented slowly and further control functions have not been defined specifically. The regulatory bodies have implemented the provisions of the Regulation only to a marginal extent since the freight corridors have been established, as (i) not many

[86] See section I.2.5.

international conflicts occurred and (ii) where these have occurred, they have been resolved by mutual contacts between the national regulatory bodies.

With respect to the provision of investment in the freight corridor, the main findings are as follows:

- For investment planning, the aspects hampering an effective achievement of the objectives consist of (i) a duplication of tasks for which the core network corridors are already in charge and (ii) overlapping national responsibilities to develop railway infrastructure and interoperable systems.
- For the coordination and publication of works:
  - → on average, the activities of the freight corridors with regard to planning and coordinating works that restrict the capacity of the infrastructure have been slightly effective, although it is recognised that a sound coordination of the temporary capacity restrictions is important considering the implications on the managing and allocating of international capacity.
  - → the freight corridors publish the approach to the coordination process of the temporary capacity restrictions in book 4 of the corridor information document, which follows the guidelines of RailNetEurope. The actual coordination of the temporary capacity restrictions takes place at a bilateral level among the infrastructure managers. A common practice of the railway undertakings consists of planning and operating transport services by taking over the international coordination and informing the partner railway undertaking(s) to ultimately contact their national infrastructure managers.

With respect to the management of the freight corridors, the main findings are as follows.

- The evaluation shows that, with respect to the situation of the Regulation not being implemented, the capacity products of the freight corridors (i.e., pre-arranged train paths and reserve capacity) have impacted only to a small extent, or not at all, on the performance of international freight trains and in terms of commercial speed, punctuality, dwelling time at border crossings and planning and operating costs. Further analysis based on additional data also shows that there is no significant difference between freight trains running on pre-arranged train paths, or other paths, in terms of journey time, punctuality and commercial speed. Relevant criteria explaining the lack of quality of the pre-arranged paths are:
  - → lack of certainty, in relation to safeguarding the capacity for freight trains from passenger traffic needs and temporary infrastructure capacity restrictions;
  - → lack of flexibility, in relation to the fact that the railway undertakings do not know the capacity needed that far in advance of the actual train run. Notably, the demand for capacity over time depends on the type of good transported, which is more stable in the medium- or long-term for intermodal traffic and less predictable for bulk goods.
- Reserve capacity is the capacity product designed to accommodate *ad hoc* path requests. The volume of requested reserve capacity is negligible, even though the 60-day deadline of the Regulation has been halved to a 30-day period in the commonly agreed framework for capacity allocation. Given the characteristics of the demand of paths, this change is not considered ambitious enough for an effective fulfilment of its intended purpose.
- Three freight corridors have received requests for train paths from applicants other than railway undertakings. For international rail freight services, the consolidated production process basically lies in the hand of the railway undertaking that organises the transport end-to-end. In this context, the costs borne by other operators to manage and organise their own international freight services might not be justified.

- For the procedures related to traffic management in regular situations, i.e. excluding major international disruptions:
  - → a number of working groups and procedures at border crossing sections have been established. However, the activities implemented have impacted only to a small extent, or not at all, on the performance of international freight trains;
  - → a major issue hampering the optimal coordination between the operation of the railway infrastructure and the terminals is the poor reliability of the estimated time of arrival of the train. Ports and terminals do not receive sufficiently reliable information about the actual status and position of the freight train running on the railway infrastructure. An attempt to improve the situation, which also involves the freight corridors, is the Connecting Europe Facility project "Electronic Exchange of ETA information". However, the analysis shows that the procedures have impacted on the performance of international rail freight services only to a small extent or not at all.
- For the procedure related to traffic management in the event of a disturbance (i.e., in the event of major international disruptions):
  - → the freight corridors have not adopted common targets for punctuality and apply the guidelines for traffic management established by cooperating with the development of the International Contingency Management Handbook. The handbook provides the standards for the continuation of freight transport activities with a duration of more than three calendar days and disruptions with a strong impact on international traffic. The application of the guidelines has impacted to a moderate or small extent on the performance of international rail freight transport;
  - → the priority rules for traffic management vary significantly between countries, and the networks of neighbouring infrastructure managers largely do not share the same priority status and in countries that have a higher share of international traffic (i.e., along north-south transport axes), freight trains are not granted a priority status. In relation to this provision, the activity of the freight corridors did impact to a small extent on the performance of the freight trains.
- The management boards publish and regularly update information on the use of railway infrastructure by creating a corridor information document, which consists of five books. The effectiveness of the information provided in simplifying the planning and operation of freight services is considered to be moderate or small. Moreover, the information provided has impacted only to a small extent or not at all on the performance of international freight trains.
- The management boards monitor the performance of freight services on the freight corridors and publish the results of this monitoring once a year. The instrument made available by the Regulation and the value added by the publication are considered to be effective to a moderate or small extent.

Table 27: Summary of the extent to which the tools provided by the Regulation produced the intended effects

Tool provided by the Regulation	Article	Related operational objective	Evaluation of the extent to which the tools provided by the Regulation produced the intended effects			
			Large	Moderate	Small	Not at all
Implementation plan	9	1.1-2.1-2-2		√	√	
Coordination of works	12	2.3-2.4			√	
Pre-arranged train path	14(3)	4.1				√
Reserve capacity	14(5)	4.1-4.2				√
Coordination of rail infrastructure capacity with access to terminals	14(9)	6.2			√	
Applicants other than railway undertakings	15	5.3			√	
Procedures for coordinating traffic management along the corridor	16(1)	3.2				√
Procedures for coordination between the operation of the railway infrastructure and terminals	16(2)	6.3				√
Common targets for punctuality and/or guidelines for traffic management	17(1)	3.1-3.3		√		
Priority rules for the management between different types of traffic	17(2)	4.3			√	
Information on the conditions of use of the freight corridors	18	5.2		√		
Monitoring of performance and user satisfaction	19	5.1		√		

Source: compilation of the authors

5.2.6. EQ.10: In how far has the Regulation overall contributed to increase the quality of infrastructure services offered to operators of international rail freight services and to the competitiveness of rail freight transport? In how far has the Regulation helped to improve coordination, increase the priority of rail freight traffic and simplified the use of rail infrastructure?

Introduction

The purpose of this evaluation question is to evaluate how the Regulation has impacted on the quality of infrastructure services and the competitiveness of freight services operated on the freight corridors.

Furthermore, the evaluation question aims at analysing the extent to which the Regulation has effectively produced any improvement in terms of coordinating the stakeholders involved in freight operations along the freight corridors, increasing the priority for freight trains and simplifying the use of the freight corridors.

In order to assess the contribution of the Regulation, the analysis provides a comparison between the current state of the art and the so-called baseline, namely the situation without the Regulation being adopted.

A detailed presentation of the main findings by sub-question is provided in Annex I[87].

[87] See section I.2.6.

Main findings

Quality of infrastructure services offered to operators of international rail freight services

On the basis of the available documents and data on the relevant key performance indicators, the quality of the services offered has been quantified by considering mostly the commercial speed and punctuality of the freight trains.

As already presented in the response to evaluation question 6 and in the elaboration of the baseline, little evidence exists that points to an improvement of performance. Similarly, data on dwelling times at border crossings, which may be seen as a proxy of the quality and coordination of paths along international corridors, are not available.

The commercial speed of international freight trains also varies widely across Member States as well as across the freight corridors[88]. Among the freight corridors, faster rail services are operated on the Rhine–Alpine, North Sea–Mediterranean and Scandinavian–Mediterranean freight corridors, whereas slower speeds are observed on the Baltic–Adriatic, Mediterranean and Czech-Slovak/Rhine–Danube freight corridors. A comparison of the quality of the services provided via pre-arranged paths and that provided via traditional paths allocated by individual infrastructure managers also shows that there is no significant difference in terms of commercial speed.

In order to reduce travel time, all freight corridors are nowadays committed to putting in place coordination measures aimed at reducing waiting times at border crossings, increasing the quality of the service and improving the competitiveness of rail freight transport. For instance, the Czech-Slovak/Rhine–Danube freight corridor aims at eliminating unreasonable border waiting times resulting from a lack of coordination at cross-border stations and between terminals.

The punctuality of freight trains at the entry and exit points of the freight corridors, as extracted from the train information system, shows that the observed average level of punctuality of international services is still unsatisfactory[89]. A comparison with national figures indicates that, on average, domestic services are more punctual than international ones. This also suggests that there is still room for improvement in the coordination between national networks and traffic management, by involving both infrastructure managers and railway undertakings.

Furthermore, even though the freight corridors have developed studies and implemented a pilot project in an attempt to coordinate infrastructure capacity and operations at terminals, a sufficiently reliable level of integration of rail freight in multimodal transport in order to offer departure and arrival times at terminals suitable for rail transport has not yet been achieved.

Competitiveness of rail freight transport

[88] According to data of the Rail Market Monitoring report, the average commercial speed for the Member States providing this data was between 34.0 and 73.5 km/h in 2016. The data of RailNetEurope report an average planned commercial speed of freight trains running on pre-arranged paths of around 52-53 km/h in 2018 and 2019.

[89] According to data of RailNetEurope, between 2017 and 2019, the share of punctual trains at the origin varies between 44% and 80%. The share of punctual trains at the destination varies between 29% and 75%.

The provisions of the Regulation did not lead to a step change in the competitiveness of international rail freight. In this respect, the following points are worth noting:

- According to Eurostat data, the volume of international rail freight transport (measured in tonne-km) did not change significantly compared to the total and since the Regulation entered into force (i.e., fluctuating around 50% between 2011 and 2017).
- In relation to the management of the freight corridors, the operational conditions of international rail services have not improved because:
  - → infrastructure capacity provided via pre-arranged train paths and reserve capacity is deemed by the concerned stakeholders to be of poor quality or not in line with the demand of railway undertakings and end customers;
  - → the use of corridor one-stop shops, which is not mandatory, is reported to be limited and this prevents the simplification of network access for applicants;
  - → pre-arranged train paths are not adequately safeguarded by infrastructure managers and are subject to changes after the publication of the annual timetable. In this respect, the infrastructure managers also report that a high level of complexity exists for the planning and coordinating of infrastructure capacity restrictions at the international level; and
  - → concerned stakeholders report a lack or unreliability of information to enable them to keep track of trains and cargo arrival times at destinations.
- According to available data, the number of railway undertakings has grown in recent years. Although it is difficult to identify the reason for this change, which could either be the opening-up of the market or the establishment of the freight corridors, the elements below suggest that the latter could be the more important reason:
  - → according to the monitoring report of the Independent Regulators' Group – Rail, the market share of non-incumbent railway undertakings has slightly increased between 2015 and 2017 (i.e., from 27% to 29%), which has been counterbalanced by a reduction in the share of the domestic incumbent (i.e., 62% to 60%);
  - → the number of conflicts for pre-arranged train paths is reported as being low by RailNetEurope with respect to the volume of requests for pre-arranged paths (i.e., on average 18% between 2017 and 2019); and
  - → as seen in the previous evaluation question, the possibility of requesting a pre-arranged path for an applicant other than railway undertakings has some effect, although in a limited number of cases.

Coordination, priority and ease of use of rail infrastructure in freight

With respect to the extent to which the Regulation has effectively improved the coordination, priority and ease of use of rail infrastructure for freight, the responses of stakeholders are not unanimous. On the one hand, most of the stakeholders consider the Regulation to be responsible for improvements in the coordination of traffic management. On the other hand, a slightly larger number of respondents to the survey questionnaire believed that the provisions are not sufficient to improve the operations of freight corridors. Accordingly, there seems to be a need for a separate entity with access to operational information for the entire corridor in order to implement effective end-to-end coordination.

Conclusions

According to the evaluation conducted, the Regulation has not contributed to improving the quality of infrastructure services offered to the operators of international rail freight services and the competitiveness of rail freight transport. The contribution to the coordination, priority and ease of use of rail infrastructure in freight cannot be measured as the view of the stakeholders is not unanimous in this respect.

Table 28 provides a summary of the evaluation of the extent to which the Regulation has contributed to increasing the quality of international rail freight services, competitiveness and coordination, priority and ease of use of the railway infrastructure.

Table 28: Extent to which the Regulation has contributed to increasing the quality of international rail freight services, competitiveness and coordination, priority and ease of use of the railway infrastructure

Aspect	Extent to which the Regulation has contributed
Quality of infrastructure services offered to operators of international rail freight services	Not at all
Competitiveness of rail freight transport	Not at all
Coordination, priority and ease of use of rail infrastructure in freight	Not measurable

Source: compilation of the authors

5.3. Efficiency

5.3.1. EQ.11: Are the (direct and indirect) costs of the governance structure imposed by the Regulation (executive board, management board, advisory groups for terminals and railway undertakings) attributable to specific stakeholder groups proportionate to the benefits, in comparison to a baseline scenario, i.e. if there was no intervention at EU level? Which factors and developments have influenced the relation between costs and benefits, both positively and negatively?

Introduction

This evaluation question seeks to compare the costs that stakeholders have to bear in order to implement the Regulation and the benefits that result from the provisions of the Regulation itself. The analysis also investigates the proportionality of the costs and benefits, their relation and the elements that may have impacted on this relation.

The answer to this question mainly relies on desk research and on data gathered from surveys, interviews, written contributions and case studies. A detailed presentation of the main findings by sub-question is provided in Annex I[90].

Main findings

According to the Innovation and Networks Executive Agency[91], rail freight corridors have received European funding amounting to a total of about EUR 35 million between 2011 and 2016. This amount covered part of the total eligible cost of 23 actions, on which around EUR 55 million was spent. The EU contribution is aimed at ensuring the delivery of activities related to the governance of rail freight corridors. The freight corridor that received most of the EU contribution was the North Sea–Mediterranean, followed by the North Sea–Baltic and the Atlantic freight corridors.

In the stakeholders' consultation, a few actors (mainly customers) provided insights on the costs of taking part in the governance of the freight corridors. Specifically, when asked

[90] See section I.3.1.

[91] Relevant data have been extracted from the grant agreements established under the Connecting Europe Facility.

about the one-off cost of implementing the Regulation, a majority of respondents indicated that they were generally in the EUR 0-20,000 range, covering mainly labour costs and participation in meetings. During the interviews most of the stakeholders refrained from providing this information.

Concerning annual ongoing costs, the stakeholders provided different estimates:

- customers and terminal managers and owners generally reported costs in the range of EUR 0-20,000 for the years 2018 and/or 2019, covering mainly travel and/or labour expenses;
- infrastructure managers reported growing annual ongoing costs between the years 2018 and 2019, covering labour, travel and other expenses. Annual ongoing costs ranged between EUR 130,000 and EUR 5,738,700 in 2018 and between EUR 140,000 and EUR 5,901,700 in 2019; and
- annual budgets of the permanent management offices of the rail freight corridors are between EUR 500,000 and EUR 2,000,000. The data available for four freight corridors show a different approach towards bearing costs for implementing the Regulation, with two benefiting more from the membership fees of the concerned infrastructure managers and less from EU contributions. Although such different patterns might depend on several, context-specific conditions, it might also suggest a different attitude of the concerned infrastructure managers in investing towards the activities needed to implement the provisions.

  It is worth observing that according to the information gathered from the field research, the annual budgets of the freight corridors cover the direct costs for the day-to-day activities of the permanent offices. Other costs borne by the participating infrastructure managers are considered to be indirect costs and necessary for the functioning of the permanent offices. The data of four freight corridors show that the coverage of the EU contribution is between 38% and 89% of the annual budget, but if one considers also the indirect costs borne by the participating members of the freight corridors, the coverage of the EU contribution would be on average less than 50% of the actual costs.

The ongoing costs arising from the implementation of the Regulation encompass the administrative burden to comply with the information obligations included in the legal rules.

- The annual and performance reports (Article 19(1) and (2)) entail a workload of 100-450 hours for the permanent office and a direct cost of EUR 1,000-10,000 for editing and printing. An estimation of the overall costs for producing these reports amounts to an average of nearly EUR 30,000 per year per corridor. A monthly punctuality report is also published by the freight corridors, on a voluntary basis. This activity does not entail a significant workload (i.e., 1.5-6.0 days per year).
- Until 2019 the user satisfaction survey (according to Article 19.3) was outsourced and conducted by a specialised contractor at a total cost of around EUR 23,000 per year. Since 2020 it has been internalised using an online tool, at an annual cost of around EUR 300 for all freight corridors. Correspondingly, the workload of the permanent office for this activity increased from 1% to 4-5% of the annual working time, neutralising the saving obtained by avoiding the outsourced service. The change of approach was motivated by a desire to improve the quality of the survey and users' participation. The number of responses has been reported as increasing, but this outcome is partial and will need further verification.
- The activity to deliver the biennial report (according to Article 22) is shared between the permanent office, which carries out the majority of the work (around 6 working weeks, as reported by one freight corridor), the chairperson of the executive board (1-2 working weeks) and the other members of the executive board (0.5-1.0

working day each). The opinion gathered from one member of the executive board is that the activities for delivering the biennial report require the addressing of many and detailed questions from the Commission, while less and more focussed questions would allow for the delivery of a qualitatively better report.

Some infrastructure managers claimed that the introduction of the Regulation has led to increased costs rather than savings due to the need for higher staff numbers for freight corridor-related products, processes and IT systems.

When asked to evaluate which areas they considered as having the potential to reduce the costs of implementing the Regulation, the majority of respondents mentioned transport operating costs and journey time. On the other hand, the least chosen options were the availability of pre-arranged paths and intermodality.

The respondents to the survey questionnaire found that traffic management in the case of a service disruption, coordination among stakeholders, interoperability and the availability of pre-arranged paths capacity are the areas with the greatest potential for increasing the benefits stemming from the implementation of the Regulation.

The stakeholders refrained from quantifying the perceived benefits resulting from the implementation of the Regulation. However, a qualitative assessment was provided during the interview programme. For the majority of stakeholders, the Regulation has yielded the following benefits:

- an increased level of cooperation and coordination between actors;
- the creation of a platform for discussion, where information, experience and best practices could be exchanged and problems shared and solved together;
- improvements in the knowledge of the market and the possibility of benchmarking;
- greater clarity in the rail freight industry;
- progress in coordinating capacity allocation along rail infrastructure and in terminal facilities;
- improvements in the level of coordination between infrastructure managers when searching for alternative routes or constructing new train paths; and
- a simplification of the process of solving problems along the corridors and analysing recurring delays.

Regarding the necessity of the specific requirements of the Regulation, stakeholders provided their opinions in written contributions. Specifically, they called for (i) more clarity in the definition of the status and the role of the executive boards and their representatives, (ii) giving executive boards the power to set targets and milestones for the freight corridors and (iii) a more structured collaboration at the cross-freight corridor level.

Conclusions

A quantitative comparison between the costs that stakeholders have to bear and the benefits resulting from the implementation of the Regulation is not possible. However, in relation to the benefits, stakeholders consider in terms of quality that they have benefited from improvements in the coordination and cooperation between the players of the rail freight industry, alongside the setting-up of a platform for sharing information and best practices and for solving common problems.

The stakeholders identified transport operating costs and journey time as the most important potential areas for cost reductions. On the other hand, they found that traffic management in the case of a disruption, coordination among stakeholders, interoperability and the availability of pre-arranged path capacity have the greatest potential to increase

the benefits. However, as was also highlighted in the previous effectiveness questions, the results have been limited.

5.3.2. EQ.12: Is the burden of preparing and updating the documents required by the Regulation (implementation plan, investment plan, corridor information documents, transport market study, etc.) proportionate to its benefits?

Introduction

This evaluation question concerns the estimate of costs associated with the implementation of the provisions of the Regulation related to the management structures of the freight corridors (i.e., the cost of establishing and managing their own structures and developing the most important measures required, among which the implementation plan, the investment plan and the transport market studies). In particular, this part of the evaluation analyses how much of these costs have been financed by funding programmes of the EU over the past years.

The analysis is based on the data gathered from desk and field research, particularly interviews and responses to the survey questionnaire. A detailed presentation of the main findings by sub-question is provided in Annex I[92].

Main findings

Two preparatory studies were launched and developed by RailNetEurope in 2008 and 2010 to implement (i) the international rail real time traffic monitoring and electronic path request systems[93] and (ii) support the European corridor concept for using the methods, tools and procedures[94]. The study and implementation of major parts of Regulation 913/2010, which was launched in 2011[95], aimed at promoting the European freight corridor concept. The eligible cost for these three actions was EUR 18.7 million, which was co-funded at 50% (i.e., EUR 9.3 million) by the EU's Innovation and Networks Executive Agency.

Between 2011 and 2012, another six studies were co-funded by the Innovation and Networks Executive Agency to establish and prepare the activities of the Rhine-Alpine, North Sea-Mediterranean, Atlantic, Baltic-Adriatic, Mediterranean and North Sea-Baltic freight corridors. The total eligible cost for these studies was EUR 11.2 million, EUR 7.6 million of which was co-financed by the EU[96]. The Connecting Europe Facility funding instrument of the EU provided support to 17 actions, the total eligible cost of which was about EUR 43.7 million, and the contribution of the EU amounted to EUR 27.4 million. All in all, the total costs of the 23 actions amount to about EUR 55.0 million, EUR 35.0 million of which was co-funded by the TEN-T programme and Connecting Europe Facility instrument of the EU[97].

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92 See section I.3.2.

93 See TEN-T action 2008-EU-90000-S. This study initiated the preparatory work for the implementation of Commission Regulation (EC) No 62/2006.

94 See TEN-T action 2010-EU-92240-S.

95 See TEN-T action 2011-EU-60008-S.

96 Four out of six studies received an EU contribution of 50%.

97 The values of the costs of the various years have not been actualised.

According to the data available, an estimate can be provided of the annual EU contribution. On average, it equates to some EUR 530 thousand per year and varies between EUR 363 thousand and EUR 688 thousand. These resources are necessary to cover the costs associated with the permanent management office and the activities for implementing the freight corridors (i.e., implementation plan, transport market study, fees for the experts of the infrastructure managers attaining the working groups and the satisfaction survey).

The data available also allows for an estimate of the efficiency of the EU contribution with respect to the observed use of the international capacity managed by the freight corridors. The estimated average EU contribution per million of path-km amounts to around EUR 33 thousand for the offered capacity and EUR 105 thousand for the requested capacity.

Relatively broad differences in the estimated numbers can be observed between the freight corridors, especially for the requested capacity. The EU contribution for the offered capacity ranges between EUR 18 and 56 thousand per million of path-km, while for the requested capacity the range is between EUR 63 and 297 thousand per million of path-km.

During the consultation process, the stakeholders provided details of the staff members assigned to tasks related to the freight corridors. The figures provided vary between a minimum of 1 unit (for the customers) to a maximum of 80 units (for an infrastructure manager). The cost of labour is usually in the range of EUR 0-20,000 per year, with the exception of some infrastructure managers estimating labour costs of between EUR 90 thousand and EUR 300 thousand per year. The freight corridors reported annual costs for the permanent management office of between EUR 350 thousand and EUR 600 thousand.

It was not possible to quantify the benefits of preparing, updating and using the documents required by the provisions of the Regulation. The stakeholders provided a qualitative assessment of the benefits, which mainly relate to an improvement in coordination, cooperation, internal discussion, information exchange, knowledge of the market, and the coordination of capacity allocation. Respondents to the survey questionnaire were fairly divided when asked to assess whether the relationship between benefits and costs of the Regulation could be improved by focusing either on reducing costs or increasing benefits. Slightly more respondents agreed to some extent that focusing on increasing the benefits would be preferable, even if this would come at the expense of higher costs for stakeholders.

There is little information available on whether the requirement to publish information on the conditions of use of the infrastructure on a corridor-by-corridor basis affects the costs of providing this information. The reporting activities were among the costs for the implementation of the Regulation that stakeholders mentioned during the consultation. Specifically, the freight corridors reported that the administrative burden related to the reporting activities is generally high. The reporting activities increase the workload of the permanent management office quite substantially, and somewhat affect the delivery of other tasks. In some cases, the concerned stakeholders called for a simplification of the reporting activities.

Conclusions

Since the Regulation has been adopted, the cost for the establishment of freight corridors amounts to about EUR 55 million, EUR 35 million of which was co-funded by the EU. The costs borne by the stakeholders for activities related to the freight corridors vary to a significant extent depending on the resources allocated. Not surprisingly, the lowest costs are incurred on the market side (i.e., customers), while the infrastructure manager committed more resources.

While benefits cannot be estimated in quantitative terms, in qualitative terms the Regulation has contributed to achieving progress in the rail freight industry in terms of improved coordination and cooperation between actors, increased flow of information and best practices to solve common issues and an improved knowledge of the market, as well as improved coordination of capacity allocation along railways and in terminals.

5.4. Coherence

5.4.1. EQ 13: How coherent is Regulation No 913/2010 with the objectives of EU transport policy (e.g. the 2016 Low-Emission Mobility Strategy, the 2011 White Paper) and with the objectives of related policies, such as energy and climate change policy (the 2018 European strategic vision for a prosperous, modern, competitive and climate neutral economy and the 2006 energy policy for Europe) and economic, trade and digital policy (the Europe 2020 strategy), the Digital Single Market Strategy for Europe)?

Introduction

Whereas the congruence of objectives was investigated in evaluation question 2, the aim of this evaluation question is to check the extent to which the provisions of the Regulation are coherent with other EU acts on transport policy and related economic and environmental policies. The analysed documents include the White Paper on Common Transport Policy (2011), strategic papers on long-term economic, energy and environmental orientations reinforced by the Green Deal Communication (COM(2019) 640 final), as well as developments in the context of the 4th Industrial Revolution addressed by the 2015 Digital Single Market Strategy for Europe.

The 2019 Green Deal not only announced an intensification of European climate policy but also an orientation of economic policy towards a sustainable carbon neutral economy. Carbon neutral technology is intended to become the base of European future trade power. This is coherent with the strengthening of the railway sector, in that new technologies and the better use of infrastructure can further improve its already significant carbon-efficiency benefits in comparison to road freight.

The Digital Single Market Strategy (SWD(2015) 100 final) was built on three pillars:

- better access for consumers and businesses to online goods and services across Europe;
- creating the right conditions for digital networks and services to flourish; and
- maximising the growth potential of European Digital Economy.

A detailed presentation of the main findings by sub-question is provided in Annex I[98].

Main findings

The following paragraphs summarise the findings of the analysis in relation to each of the relevant policy documents.

White Paper (2011): The White Paper of 2011 sets very ambitious targets for which the contribution of rail freight transport is essential. These targets, described in more detail in evaluation question 2, include a shift of road freight transport for distances over 300 km

[98] See section I.4.1.

to rail and inland waterways by 30% (by 2030) and 50% (by 2050), and a sufficient connection of all core seaports to rail freight.

The better use of existing rail infrastructure capacity is a necessary requirement for delivering these White Paper's targets, because the extension of capacity achievable by the completion of the core networks corridors will most probably take more time than expected (see also the Report of the Court of Auditors, 2018). As the shortest routes are often busy with passenger trains during the day, freight trains are diverted to the next best routes which have to be found by efficient capacity management. The freight corridors represent a step in this direction. Thus, as pointed out in evaluation question 2, the objectives of the Regulation are going in the right direction for contributing to the targets of the White Paper (2011). However, as also pointed out in evaluation question 2, the expected impacts are very small and can only become effective in the context of other policy actions (e.g., internalisation of external costs of transport, social regulations for road transport and stopping abuse of liberalisation legislation for low-cost road haulage).

Energy, climate, economic policy: A number of EU policy papers on energy and environmental issues were published in the last decade. The European Green Deal (COM(2019) 640 final)) goes well beyond all previous initiatives of the Commission which is why the preceding policy documents will not be further discussed here. The part of the Green Deal that relates to transport policy is discussed in more detail in evaluation question 2. Addressed areas relating to the freight corridors objectives are the strengthening of multimodal transport, better management and increase of railway capacity and the improvement (automation) of operations.

At the time the Regulation was developed and adopted, the potential of the railway system was expected to be increasingly exploited and supported by concerted transport policy actions. Fostering innovations and the employment of new railway technology, in particular information technology relevant for traffic control and capacity management, was expected to have an impact on other sectors of the economy and contribute to economic growth (coherent with the EU 2050 Long-term Strategy, 2018).

Findings from the desk research indicate, however, that these expectations did not materialise, first, because the transport industry had more incentives to develop new technology for the road transport market which is much larger than the rail market and less regulated ("path dependency" of innovation)[99]. Second, national transport policy concerning rail freight support and creating fair market conditions was not very ambitious in most EU countries. Third, the fragmented railway system in the EU, with old technology and uncoordinated organisation, was not able to respond to market needs. The Regulation aims at improving an important segment of this organisation which is the capacity allocation for international freight trains. While this objective conforms with EU transport, energy and climate policy, the actual impact of the Regulation are very few and far between.

Digital Single Market Strategy: The Digital Single Market Strategy (SWD(2015) 100 final) primarily intends to create the right conditions for the EU economy to make use of the digital progress in the context of the "4th Industrial Revolution" which has dominated the debate on the drivers of economic growth since it was presented at Hanover Fair in

[99] See https://systemsinnovation.io/technology-path-dependency/

2011 by acatech[100]. Logistics play a dominant role with respect to the application of digital technology for network management, assistance systems and automation.

The issues of digitalisation relate to the core area of the Regulation insofar as digital instruments are essential for an efficient management of network capacity. The European Rail Traffic Management System is based on efficient digital processes as it combines radio-based vehicle communication technology (i.e., 3G, 4G and in the future 5G) with track-based information.

RailNetEurope's developments for information systems (i.e., path coordination systems, corridor information documents, train information systems and train charging systems) make use of developments in information technology, while several national infrastructure managers partly apply even more advanced technologies. The "click-and-ride" app of the German infrastructure manager allows for very fast responses to path requests and reduces response times to 3 minutes (instead of the previous 72 hours), and reduces the possibility of making these from 48 hours down to 45 minutes before the operation. This leads the way in terms of responding to the market needs for *ad hoc* path allocations, using network information generated by advanced software development. It follows from this that a further development of freight corridor instruments along these lines will substantially increase their effectiveness and contribute to fostering the competitiveness of the European digital sector. The Timetable Redesign Project, which was started by RailNetEurope and Forum Train Europe in 2017 and is scheduled for implementation in 2025, intends to use the progress of digital technologies more radically. This might lead to a revision or replacement of the capacity management products of the freight corridors (i.e., pre-arranged paths and reserve capacity).

Conclusions

The Regulation is coherent with the goals of economic, climate and digital policy publications of the Commission. However, the influence of its implementation on the general policy goals and targets has so far been limited. Fostering the application of new network-based information applications would increase the effectiveness of the freight corridors' instruments and make the rail freight sector more interesting for the industrial digital sector. The Timetable Redesign Project is fully coherent with the Digital Single Market Strategy and appears promising in potentially providing a platform for the development of standardised digital services for rail capacity management.

Table 29: Summary of the coherence of the Regulation with the objectives of EU transport policy

Policy areas	Direct relationships with the freight corridors	Indirect relationships with the freight corridors
White Paper 2011	Targets for modal shift of long-distance freight transport; Linking core seaports to rail; Integration of rail/road terminals; Developing core and comprehensive TEN-T networks	User and polluter-pays principles, internalisation of external costs; Complete high-speed network, providing more capacity for rail freight transport on conventional lines
European Green Deal	Multimodal transport;	Sustainable economic growth; Innovations for green technology

[100] See T. Bauernhansl, M. Ten Hompel, B. Vogel-Heuser (Hrsg.): *Industrie 4.0 in Produktion, Automatisierung und Logistik.* Wiesbaden 2014, ISBN 978-3-658-04681-1.

Policy areas	Direct relationships with the freight corridors	Indirect relationships with the freight corridors
	Better management of rail operations	
Digital Single Market Strategy	ERTMS, Corridor Information Systems, apps for fast path offers, tracing of trains, revision or replacement of capacity management products by digital services developed by the Timetable Redesign Project	Assistance systems and automation; Network-wide information systems; Network-wide management; concepts supported by digital technology, comparable to Eurocontrol for aviation

Source: compilation of the authors

6.4.3 *EQ15: To what extent is the Regulation coherent with other relevant and related EU legislation in particular:*
(a) The Single European Railway Area Directive 2012/34/EU, including all amendments as well as delegated and implementing acts based on that Directive;
(b) The TEN-T Guidelines, Regulation (EU) No 1315/2013 and the CEF Regulation (EU) No 1316/2013;
(c) The Combined Transport Directive, Council Directive 92/106/EEC
(d) The Railway Interoperability Directive (EU) 2016/797 and the technical specifications for interoperability defined in accordance with that Directive, in particular the technical specifications for interoperability relating to telematics applications for freight, Commission Regulation (EU) No 1305/2014;
(e) The legislative acts included in the Fourth Railway Package, as far as relevant.

Introduction

This evaluation question examines the coherence of the Regulation with the legal framework in three areas of intervention in the EU railway system: (i) legislative acts for reorganising the European railway sector (passenger and freight transport), (ii) the consistency with the TEN-T Guidelines, which is mentioned as an important issue in both regulations, and (iii) legislative acts specifically related to segments of rail freight transport (e.g., combined transport). Each legislative area is discussed in the following sections.

A detailed presentation of the main findings by sub-question is provided in Annex I[101].

Main findings

According to the desk research carried out the main findings are as follows.

(a) Single European Railway Area Directive 2012/34/EU

Directive 2012/34/EU represents a recast of the First Railway Package and establishes the "Single European Railway Area". Relevant articles concern:

- cross-border agreements (Article 14);
- market monitoring (Article 15);
- network access, charging (Chapter IV);
- allocation of capacity (Articles 39 and 40) (for more than one network);
- priority rules (Article 47);
- capacity enhancement plans (Article 51);

[101] See section I.4.2.

- event of disturbance (Article 54); and
- coordination of regulatory bodies (Article 57).

The revised Annex VII of the Directive furthermore specifies rules for:

- preparing and timing the working timetables and their updates;
- deadlines for receipt and processing of capacity requests;
- more flexibility for rescheduling of allocated train paths;
- procedures, cooperation and communication between IMs in the case of temporary capacity restrictions;
- procedures, cooperation and communication for trains crossing networks; and
- ensuring international train paths at least 11 months before changes to the working timetable.

The Regulation overlaps in particular with Articles 39, 40 and Annex VII of the Recast Directive. The rules for capacity allocation are defined in the Recast Directive in a general way for passenger and freight transport. A conflict between the Regulation and the Recast Directive was not discovered.

The rules of Annex VII regarding technical capacity restrictions (4th bullet point above) address the responsibility of infrastructure managers in the case of temporary capacity restrictions. This is conclusive insofar as the infrastructure managers are responsible for allocating paths to passenger and freight trains and most parts of the network are offered to mixed use. The infrastructure managers are also responsible for re-arranging paths which were pre-arranged by corridor one-stop shops.

However, the allocation of responsibility to the infrastructure managers in the case of temporary capacity restrictions can be (mis-)understood as moving backwards to singular and autonomous management by national infrastructure managers, neglecting the consequences on international freight transport. The latter interpretation would clearly conflict with the objectives of the Regulation to harmonise the rules in this relevant area across borders (re-allocations of paths because of temporary capacity restrictions is a frequent issue of rail infrastructure management). This potential conflict can be reconciled in the rail freight sector by agreements between national infrastructure managers of the freight corridors. Such agreements are already working in some freight corridors (e.g., on the Rhine-Alpine freight corridor).

The priority rules for allocating capacity are defined in a more general way in the Recast Directive compared with the Regulation. Article 47(3) and (4) aims to take account of the importance of a service to society and to give adequate consideration to the importance of freight services, and in particular international freight services, while recital (11) requires that "sufficient priority should be given to rail freight traffic". This means that the need to prioritise international freight transport is expressed more directly in the Regulation.

Nevertheless, the different allocations of responsibilities are regarded as confusing by several interviewees in the stakeholder consultation (see also case study 3). Therefore, a clear definition of the role of freight corridor bodies would be most useful, as it has been prepared by the Efficient Cross Corridor Organisation Working Group at the Union internationale des chemins de fer.

RailNetEurope developed a handbook on International Path Allocation (2019) on the basis of the Recast Directive's provisions. Path requests are allocated through the path coordination system of RailNetEurope. The interviews with stakeholders gave no indication that the lack of clarity of the legal provisions (Recast Directive and freight corridors'

Regulation) led to serious problems of international path allocations. More critical problems were mentioned with respect to differing border processes, i.e. missing coordination of rail traffic across borders. Critical responses were also given in interviews with respect to the functionality and user friendliness of the path coordination system, which is partly not compatible with national path allocation systems.

(b) TEN-T Guidelines and CEF (Regulation (EU) No 1315 and 1316/2013)

There are apparent conceptual differences and overlaps between the TEN-T Guidelines and the Connecting Europe Facility on the one hand and the Regulation on the other. They can be summarised as follows:

- While the TEN-T Regulation establishes a network concept (core and comprehensive) for which the core network corridors represent an interim stage until 2030, the Regulation establishes a corridor concept without the perspective of further development into a network.
- The TEN-T Regulation defines clear and comprehensive responsibilities for investment, European Rail Traffic Management System and interoperability (with the Interoperability Directive and the establishment of the European Railway Agency in the context of the Fourth Railway Package). The Regulation defines similar responsibilities for the executive boards of the freight corridors for a specific segment, namely international rail freight transport.
- The freight corridors include sections which are not included in the core network corridors or in the core network, so that they may be regarded as a corridor concept of their own, which was not the original idea according to recitals (10) of the Regulation and Article 3, which "regards the integration of the international corridors for rail freight into the existing TEN-T and the European Rail Traffic Management System corridors" and emphasises the close coordination between the freight corridors and the TEN-T.
- In several freight corridor documents (e.g., Implementation Report COM(2018) 189 final) the differences between the freight corridors and TEN-T were held to be reasonable because of the predominant management issues of the freight corridors. However, the Regulation also includes strategic provisions that overlap with the TEN-T Regulation. With respect to management issues, the Regulation appears to be inflexible because the corridor definitions for the first nine corridors are fixed (defined in the Annex), so adjustments to the first nine corridors are difficult and the instruments defined in the provisions cannot be changed according to market and technological developments.

The TEN-T Regulation tried to integrate the freight corridors by defining the same number, specifying the same geographical orientation and ensuring broad compatibility with the core network concept for the first nine freight corridors. However, this principle of close communality of both corridor concepts was not followed in the case of the definition of the freight newer corridors, the Alpine-Western Balkan and the Amber. Therefore, the rationale for the Regulation is not clear: is it part of the TEN-T core network corridors (or at least of the core network) or a corridor concept of its own, targeted at management issues for international rail freight transport.

Article 48 of the TEN-T Regulation requires close coordination of investment and interoperability planning with the freight corridors in order to avoid any duplication of activity. However, it does not clearly allocate responsibilities. Given that the TEN-T scope of responsibilities is much wider in that it comprises all modes, all transport branches (passenger and freight) and all kinds of investment (including rail-road terminals), this implies that the international rail freight issues are a special part of the overall TEN-T planning.

This would require the boards of the freight corridors to specify the investment needs and the TEN-T coordinators to integrate these needs into TEN-T investment planning. Furthermore, a coordination with national transport investment master planning will be necessary as the Member States still have the competence for infrastructure planning and implementation. The freight corridors are following this interpretation in part and either replicate the investment plans from the TEN-T and national planning and/or cooperate directly with the TEN-T coordinators.

(c) The Combined Transport Directive, Council Directive 92/106/EEC

The Directive on Combined Transport, which was enacted 28 years ago:

- gives a definition of combined transport;
- guarantees the freedom to provide cross-border services;
- protects combined transport from national restrictions;
- sets road cabotage limitations;
- allows vehicles used on combined transport road legs to carry heavier loads; and
- partly exempts road vehicles for combined transport from road taxation.

Combined transport has been the only prosperous segment of rail cargo transport in the past decade. The Commission started a revision of the Directive in 2014/15 and presented a proposal in 2017 (COM (2017) 648 final). The proposal included an extension of the road leg to a maximum of 150 km and the inclusion of national combined transport in the Directive (legal equivalence with international combined transport). Furthermore, it extended the intervention power of Member States by means of a "transit clause" allowing a Member State to unilaterally disqualify a combined transport operation. The eligibility for funding of international combined transport operations was proposed to be increased from 41.7% to 72.7%.

Some stakeholders (including the umbrella association of combined transport) criticised the proposal and evaluated it as a step backwards towards increased national competences, reducing the attractiveness of international combined transport. As the proposed revision was not well accepted by stakeholder groups and it did not seem to be appropriate to fulfil the expectation of contributing to a major change of rail freight transport, it was withdrawn in order to prepare a new version by the end of 2020.

As combined transport is presently the only growing segment of EU rail freight transport, it is urgent to regulate this segment by means of a directive which considers the dynamic development of market needs and of technology. There is thus a close relationship between the revisions of the Combined Transport Directive and the Regulation insofar as the trains for combined transport partly require medium-term path allocations, because short-term adjustments can be managed by the loading factors of the trains.

(d) Railway Interoperability Directive 2016/797/EU

Interoperability is a very important issue for the fragmented European railway technology, as well for the superstructure and the control technologies (i.e., the European Rail Traffic Management System). The Fourth Railway Package allocates the main responsibility for the technical implementation of interoperable rail systems to the European Railway Agency – within the Delegated Acts of the Commission for drafting, adopting and reviewing the technical systems for interoperability (Article 5). Interoperability issues have to be considered in the context of investment planning and co-financing for TEN-T projects.

Article 11 of the Regulation requires that the management boards set up deployment plans for interoperability and evaluate them on the basis of a cost-benefit analysis. The issues of interoperability are defined in Directive 2016/797/EU, the responsibility for their

development is allocated to the European Railway Agency by the Fourth Railway Package and the responsibility for planning and implementation is allocated to the core network corridor coordinators in cooperation with national governments. Decisions on co-finance are taken by the Innovation and Networks Executive Agency and other EU financial institutions so that the whole strategic network development and interoperability is allocated to competent institutional bodies.

All provisions include (international) rail freight transport, so that it can be expected that the freight corridor bodies will add further needs for specifications or suggest priorities. Therefore, the scoping of interoperability tasks for the freight corridor bodies in Article 11 of the Regulation appears to be too wide as it requires setting up deployment plans, performing cost-benefit analyses and preparing financial plans. This does not call into question the responsibility of freight corridor boards to prepare information documents on bottlenecks for rail freight, the necessary improvements to interoperability on the corridor and the monitoring of implementation. The Scandinavian-–Mediterranean freight corridor, for instance, is treating investment-related issues in this way.

(e) Fourth Railway Package

The Fourth Railway Package (2016, transposed in 2019) includes a technical and a market pillar. The technical pillar focuses on interoperability and safety and overlaps with freight corridor provisions on these issues. As the package addresses these problem areas comprehensively for both passenger and freight transport, it defines the responsibilities of freight corridor bodies as planning and deploying interoperability measures, including cost-benefit analyses. The package clearly allocates the responsibility for the European Rail Traffic Management System and interoperability to bodies other than the freight corridors (i.e., the European Railway Agency and the European Rail Traffic Management System and Interoperability Coordinator). The role of European Railway Agency has been enhanced with respect to:

- the authorisation of vehicles;
- European Rail Traffic Management System technical solutions;
- checking the technical compatibility of vehicles with the characteristics of the route; and
- further harmonisation with national rules.

The package's market pillar includes provisions for non-discriminatory access to infrastructure and separates the competences of infrastructure managers from those of railway undertakings (while still allowing for vertically integrated holding companies). It furthermore contains provisions for the international cooperation of infrastructure managers, the facilitation of freight train operations to be allocated following *ad hoc* requests and the international cooperation of regulatory bodies.

The amendments introduced by Directive (EU) 2016/2370 clarify the role and responsibilities of infrastructure managers and regulatory bodies (Article 7). This Directive also establishes a Network of European Infrastructure Managers (Article 7f). This goes beyond the Regulation, insofar as the latter is restricted to the freight corridor concept and does not include provisions for the network-wide coordination of strategic and operational issues for international rail freight transport. Although some overlaps of the Directives of the 4th Railway Package with the Regulation are evident, as well as some extensions towards a network-wide coordination of investment and management of capacities, conflicts were not discovered.

A duplication of wording can be observed with the use of the term "one-stop shop". However, the purpose of the "one-stop shop" is defined in the technical part of the Fourth

Railway Package as an entry point for multiple applications for authorisations and certifications of rail undertakings for operating beyond a Member State and is not restricted to a corridor.

Conclusions

The Regulation is widely coherent with EU regulations for the railway sector. Most overlapping provisions with legislation approved after 2010, which clarify the responsibilities for plans and implementations, are not difficult to handle in practice (e.g., Recast Directive and Fourth Railway Package, also considered in the Handbook of RailNetEurope for International Path Allocation (2019)).

The only serious overlaps which lead to inefficient duplications of tasks and work relate to provisions within the TEN-T Regulation. The freight corridors widely overlap with the TEN-T Regulation with respect to investment planning, the European Rail Traffic Management System and interoperability deployment. The TEN-T Regulation requires coordination with the freight corridors in Article 48, but the means of coordination and the responsibility of institutions is not specified.

Table 30: Summary – Coherence with other relevant and related EU legislation

EU legislation	Major overlaps with freight corridors provisions	Character of relationship
Recast Directive 2012/34/EU	Art. 39, 40: Allocation of capacity; Annex VII: Rescheduling of allocated paths, procedures for temporary capacity restrictions; Article 57: Cooperation of regulatory bodies	Clarification of competence of infrastructure managers; no serious conflicts with the Regulation; possibility of allocating freight corridors related tasks to management boards Overlap with Article 20 of the Regulation
TEN-T Guidelines (EU) 1315, 1316/2013	Chap. III, IV: Core Network, core network corridors including governance, work plans of coordinators; Chap. I, Art. 7: Projects of common interest-eligibility for financial assistance; Chap. V, Art. 48: Coordination	Comprehensive responsibility for strategic tasks (passenger and freight rail) allocated to core network corridors coordinators; Art. 48 calls for adequate coordination of freight corridors with the core network corridors; avoiding any duplication of activity; no specification of responsibilities
Combined transport Directive 92/106/EEC	Proposal for revisions presented in 2017 (COM (2017) 648 final). New proposal expected in 2020.	General: only dynamic segment of rail freight transport; weak integration of terminals in the Regulation; high potential for medium-term path allocations
Interoperability Directive 2016/797/EU	Issues of ERTMS and interoperability overlapping; included in TEN-T Guidelines; tasks in Technical Part of Forth Railway Package	The Regulation addresses tasks but not the competence for implementation; European Railway Agency competence clarified with the Directive together with the Fourth Railway Package
Telematics application (EU) 1305/2014	Technical specifications for interoperability; mentioned in general terms in the Regulation, competence of the European Railway Agency for implementation	Technical application provisions; no conflict with the Regulation; feedback between digital innovations and freight corridors management instruments could be fostered
4th Railway Package Technical and market pillars	Technical pillar overlapping with allocations for ERTMS and interoperability; market pillar overlaps with Art. 20 of the Regulation (reg. bodies)	Clarifying the responsibilities; no serious conflict with the Regulation; manner of reconciling conflicts between different national reg. bodies left open; overlap with Article 57 of the Recast Dir.; no problem reported by regulatory bodies in interviews

Source: compilation of the authors

5.4.2. EQ 16: How has the work of the freight corridors been supported by EU funding instruments and institutions, such as the Connecting Europe Facility, the European funds for transport, regional and/or industrial development (such as the structural funds and the cohesion fund), the Marco Polo programme, the Shift2Rail Joint Undertaking as well as the European Investment Bank?

Introduction

There are many different EU funding instruments for EU rail transport investments beyond national public funding. The Marco Polo programme was a dedicated instrument for supporting modal shift actions. It is analysed below whether its integration into the Connecting Europe Facility has been beneficial to intermodal transport. The Connecting Europe facility funding is dedicated to TEN-T projects and supports railway projects without particular dedication to passenger or freight transport. There is a number of further funding instruments (see a study for the European Parliament by Doll et al. (2015)) which – in contrast to the Connecting Europe Facility funding – do not give priority to railway investments.

A detailed presentation of the main findings by sub-question is provided in Annex I[102].

Main findings

Marco Polo programme: This programme was launched in the context of the White Paper 2011 and followed the main goal of supporting modal shift to rail and waterways by increasing intermodal transport and taking other catalyst actions. Marco Polo II (2007-2013) was supported with EUR 450 million. At the end of 2013, dedicated funding was terminated and the task of supporting intermodal transport and modal shift was integrated into the TEN-T, and financed by the Connecting Europe Facility and other funding sources. Therefore, the follow-up of the programme funding was integrated into the multi-annual financial framework 2014-20. However, the eligibility conditions[103] of the Connecting Europe Facility made it difficult to fund improvements to terminal/intermodal facilities.

Other European funding instruments: The total budget allocated to all transport investments in the period 2014-20 was EUR 98.9 billion. EUR 68.5 billion came from ERDF/CF/ESIF[104] funding and EUR 24.05 billion from Connecting Europe Facility funding (for TEN-T). Of this, 44% of all EU funding resources were spent on roads and 27% on rail. Out of that, however, the Connecting Europe Facility allocated 74% to rail and 8% to road (the funding share for rail from ESIF and Connecting Europe Facility is 37%; the European Investment Bank contributes about 13%). Only 1% was invested in multimodal freight

[102] See section I.4.3.

[103] TEN-T projects can be financed according to Article 7 of the TEN-T Regulation if they are projects of common interest. Important criteria are the compatibility with the comprehensive/core networks and economic viability. Transport finance by Connecting Europe Facility focuses on cross-border projects and projects aimed at removing bottlenecks or bridging missing links in various sections of the core network and on the comprehensive network, as well as for horizontal priorities such as traffic management systems (ERTMS). Connecting Europe Facility Transport also supports innovation in the transport system in order to improve the use of infrastructure, reduce the environmental impact of transport, enhance energy efficiency and increase safety. According to the criteria of eligibility, new investments or major upgrades receive priority.

[104] ERDF stands for European Regional Development Fund, CF stands for Cohesion Fund and ESIF stands for European Structural and Investment Funds.

transport (European Court of Auditors, 2016). This indicates that the volume of funding to support intermodal transport and the necessary facilities has been modest since the end of the Marco Polo Programme.

The Connecting Europe Facility is co-funding TEN-T investments. From the multi-annual programme 2014-2020, EUR 16.3 out of the total of EUR 23.3 billion (72%) spent by 2019[105] was allocated to railway investments aimed at funding the following objectives:

- building cross-border infrastructure and bridging missing links;
- deploying sustainable and efficient means of transport; and
- interconnecting transport modes and enhancing interoperability.

The Innovation and Networks Executive Agency brochure indicates that due to CEF actions, 2,863 km of railway lines for freight will be improved. The overall rail funding for the core network corridors is exhibited in Table 31.

Table 31: CEF rail funding for core network corridors in the MFF 2014-2020

Core network corridor	CEF rail funding (EUR billion)	Number of projects
Rhine-Danube	3.9	102
North Sea-Baltic	3.1	98
Mediterranean	3.0	142
Baltic-Adriatic	2.5	97
Scandinavian-Mediterranean	2.4	93
Orient/East-Med	1.5	100
North Sea-Mediterranean	1.5	110
Atlantic	1.6	86
Rhine-Alpine	0.7	81
Total	**16.3**	**909**

Source: Innovation and Networks Executive Agency (2019)

The Innovation and Networks Executive Agency subdivided the funding into four funding objectives, the first of which is dedicated to the removal of bottlenecks, bridging missing links, enhancing rail interoperability, and in particular improving cross-border sections. As border crossing investments are particularly important for rail freight because the share of international transport is much higher for freight (about 50%) compared to passenger transport, one can reasonably assume that part of the funding was dedicated to rail freight and as such partly to freight corridors while the major part was allocated to high-speed rail investments. While data of the Innovation and Networks Executive Agency show that the major part of the Connecting Europe Facility funding went to Funding Objective 1, it is not known how much was allocated to freight corridor investments.[106] It has to be added that the Commission increased the maximum co-financing rates to 40% for cross-border rail investments and to 50% for European Rail Traffic Management System.

[105] Innovation and Networks Executive Agency (2019): Connecting Europe Facility Brochure.

[106] See Doll et al. (2015).

National budget figures do not separate investments for passenger versus those for freight transport.

Implementation of innovations and research and development projects (H2020): The Regulation could not anticipate that several technological developments were to lead to new ways of technical implementation, for instance:

- The development of digital control technology which will turn vehicles into communication centres for traffic information and control;
- The development of geo-information systems and software apps which enable network-wide network management and make isolated corridor information concepts for rail freight obsolete;
- The development of assistance systems and future automation in open networks, which, from a technological point of view, is much easier for rail systems compared with road transport.

The major EU-co-financed project for rail research and development in the H2020 Framework Programme is Shift2Rail, a public-private partnership with a volume of about EUR 1 billion, 50% of which is co-funded by the EU. The research activities supported aim at a drastic cost reduction for rail transport, capacity increase, increase of punctuality and reliability, full interoperability and a reduction of negative externalities.

The Regulation does not hinder such technological progress, but it includes provisions which will have to be adjusted to encourage infrastructure managers together with railway undertakings and terminal operators to test and gradually introduce new technical options for traffic management. Testing specific new technologies on selected pilot corridor sections to prepare their final design for network-wide application presently does not make full use of the freight corridors (i.e., "corridors as enablers of new rail technology" to break the trend to path dependency of innovations in the transport sector)[107].

Major innovations for rail freight transport are tested world-wide, e.g. in Italy with high-speed cargo (Mercitalia), or visionary alternative studies (i.e., Hyperloop, Swiss Cargo Sous Terrain, CAREX HSR connections of major airports). The same holds true for new logistics concepts for container transport and single wagon or wagon group technologies, supported by automated coupling and control systems.

Conclusions

The initiatives starting with the Marco Polo programme to support the development of intermodal transport with dedicated funding were not continued. The change to the Connecting Europe Facility-based support led to reduced funding for intermodal freight transport. Only 1% was invested in multimodal freight transport according to the European Court of Auditors (ECA, 2016), i.e. in the only growing segment of rail freight in the past decade. Funding for rail research and development has improved through the H2020 Framework Programme, in particular through the establishment of the Shift2Rail programme. However, adding up the aggregate research funds from all public and private sources (e.g., vehicle manufacturers, technology suppliers, software industry), road research receives by far the highest financial support. A separation of funding by passenger and freight rail transport, or by freight corridor and other network parts is not possible, neither for Connecting Europe Facility nor for European Investment Bank co-financing.

[107] See for instance the DLR research/development on Next Generation Trains for cargo transport. https://verkehrsforschung.dlr.de/en/projects/ngt-cargo

Table 32: Summary – Sources of EU funding for the freight corridors

Main funding sources	Estimated support for rail freight transport	Maximum co-funding rate of eligible costs
Connecting Europe Facility	High: about one half allocated to FOB1 incl. border-crossing sections	85%
European Regional Development Fund	Moderate: major transport investment funds allocated to road	85%
European Investment Bank	Low: Loans widely allocated to PPPs, in particular High-speed Rail	75%
Loan Guarantee for TEN-T Projects	Very low: PPPs with revenue base show decreasing tendency after 2008 financial crisis	20%
Framework research programme	**Volume, research areas**	**EU co-finance**
Shift2Rail	Productivity and capacity increase, interoperability, quality (punctuality, reliability, reduction of external costs (noise))	50%

Source: compilation of the authors

5.4.3. EQ 17: How does Regulation (EU) No 913/2010 interact with other international and national/local legislation and initiatives (relevant for (international rail freight transport)?

Introduction

A main challenge for coordinated infrastructure investment planning in the EU is the competence of the Member States for planning and implementation (subsidiarity principle). Furthermore, railway organisations are different – some Member States have established independent infrastructure managers while others preferred to establish a vertically-integrated organisation model for which the infrastructure managers and the incumbent railway undertaking are subsidiaries of a common holding company. This leads to different national regulatory legislation and also to different responsibilities of regulatory bodies in terms of market monitoring (addressed in Article 20 of the Regulation and Article 57 of the Recast Directive).

Furthermore, the EU railway networks are interlinked with the networks of neighbouring non-EU countries and very long-distance rail transport is organised alongside former silk roads to East Asia and China. Evaluation question 17 aims at analysing the way in which the Regulation interacts with national legislation and the EU external dimension of rail freight transport.

A detailed presentation of the main findings by sub-question is provided in Annex I[108].

[108] See section I.4.4.

Main findings

Interaction with national legislation: interactions between the Regulation and national legislation occur at the level of infrastructure planning and the regulation of infrastructure use. Plans for developing national transport infrastructure are subject to national law (master plans transposed into transport infrastructure development and budget legislation). National transport master plans usually do not highlight the links to the freight corridors explicitly; this is in contrast to the links with the core network corridors, which are mentioned in particular in the case of EU co-finance. Most rail projects include capacity and quality improvements for passenger and freight transport, although the planned shares for future rail freight use are often not decided upon when investment projects are started. The provisions in the Regulation to plan dedicated investment measures for international rail freight may have intended that these plans enter into the national railway investment planning. However, this has not been the case in practice as several annual reports of the freight corridors describe openly: in most cases the freight corridors bodies adjust their investment, European Rail Traffic Management System and interoperability plans to national plans and those of the core network corridors (see the long versions for evaluation question 3.4 in Annex I).

Rail infrastructure is provided for mixed use in most parts of the EU rail network (exceptions are high-speed rail lines and some seaport to hinterland marshalling yard connections for cargo transport). The major part of capacity is usually allocated to passenger transport, in particular to regular daily traffic based on yearly timetables. In the suburban areas of large agglomerations, regional and long-distance passenger transport overlaps with freight transport, leading to congestion and disturbances, which may propagate through the network. In the end, rail freight trains receive a share of capacity dependent on the time of the day, so that accommodation with freight transport demand is difficult (in particular for urgent/same day deliveries). This leads to manifold complaints of rail freight stakeholders in consultations.

The Regulation has the objective of giving priority to international rail freight transport (Article 14 (2), (3); see also evaluation question 1). In the case of capacity constraints, the national practice of first allocating capacity to passenger trains (at least during the daytime) and allocating the remaining capacity to freight trains makes it impossible to give priority to international freight trains. This is the case for the corridors associated with high volumes of rail freight transport, but also those in countries in which the main freight routes overlap with regional passenger transport. As the provisions of the Regulation in Article 14(2) and (3) are very general and partly based on outdated information[109], they have little influence on the practices of infrastructure managers in the case of network congestion. Rail track charges for freight transport are comparatively low in most EU countries, considering that infrastructure managers tend to maximise revenues for financing current infrastructure costs and (at least) part of maintenance costs, there is little economic incentive for them to prioritise rail freight. These examples underline that the general "shall" postulations of the Regulation for the behaviour of the management boards are not effective as long as there are no clear commitments from national governments and appropriate incentives for the infrastructure managers.

[109] E.g. "taking account of the transport market study", "the requests for infrastructure capacity relating to the past". Article 14 (3) also requires that infrastructure managers "recognise the need for capacity of other types of transport, including passenger transport." There is no clear binding rule to prioritise international rail freight trains in case of conflicts because of congestion or temporary capacity restrictions.

It follows that the Regulation has not substantially influenced the overall capacity share which is allocated to freight in national rail systems. According to the findings of the Implementation Report of the Commission (2018), some countries follow the Regulation only to a minimum extent. This is confirmed by the recent decision of the German Ministry of Transport to introduce a synchronised service system ("Deutschland Takt") for long-distance and high-speed passenger rail by the end of 2020. Many bottlenecks have still not been removed so that an extension of long-distance passenger transport will reduce capacity on the main freight train routes (including international routes). The latter are pushed onto less efficient routes meaning that the competitiveness of rail freight will decline.

External dimension: The external dimension is addressed in the White Paper (2011) with respect to the following aspects:

- extending the market rules and reinforcing the transport dialogue with main partners;
- promoting energy efficiency and climate goals in multilateral forums;
- an international dialogue on transport security;
- extending the EU transport and infrastructure policy to the neighbours; and
- intensifying cooperation to remove barriers.

The most prominent external dimensions of rail infrastructure planning are:

- TRACECA corridor (Europe-Caucasus-Asia);
- Belt and Road Initiative (BRI; Europe-Asia-China).

China supports the development of rail infrastructure along the Silk Road as well as rail transport between Europe and China through transport subsidies. The interfaces between the Belt and Road Initiative and the freight corridors are shown in Annex I.

A crucial problem for international rail transport with non-EU countries is the differing legacy of infrastructure use, technical requirements for rolling stock and the associated procedures for legal admissions and for border control as well as the regulation of liabilities. The Intergovernmental Organisation for International Carriage by Rail, established in 1893, today comprises 50 member countries (2017). Its objectives are promoting, improving and facilitating international rail traffic. Its main activities are the international exchange of information, data and experiences, as well as the development of rules and good practices, resulting in legally-binding decisions and non-binding guidance documents. Recent documents published are:

- uniform rules concerning technical admission of railway material (2017);
- uniform rules concerning the validation of technical standards (2019);
- regulations concerning the international carriage of dangerous goods (2019); and
- specific provisions (2019) relating to handling agreements checklists, contracts for hiring a locomotive with driver, traction contracts, or sub-contracting.

The Regulation and its implementation have been integrated into international rail transport as part of the EU's accession to the Convention concerning International Carriage by Rail in 1999.

Conclusions

In accordance with the subsidiarity principle, Member States have the competence for the national parts of investment planning. Despite the fact that EU directives and regulations, e.g. on interoperability, are transposed into national law, Member States are widely independent with respect to decisions on investment projects. Their planning and

prioritisation can, however, be effectively influenced by co-financing provisions. Differences between allocating capacity to passenger and freight transport are mainly caused by national policy decisions and in general favour passenger transport. International railway connections to non-EU neighbours and Asian countries underline the importance of common rules for the use of infrastructure in international traffic and the simplification of liability regimes. The EU acceded to the Convention concerning International Carriage by Rail in 1999. Border processes can be further simplified, e.g. several days could be saved on the routes from the EU to China.

Table 33: Summary – Interactions with national legislation and other initiatives

Areas	Provision of infrastructure	Use of infrastructure
National regulations	Competence of Member States; incentives through EU-co-finance; infrastructure KPIs in the case of new investment	National regulations differ, in particular for vertical (dis-)integration schemes; different organisations exist for regulatory bodies; first priority given to passenger trains; national policy decisions are taken without consideration of potential conflicts with EU legislation
External relationships	Several interconnection stations in neighbouring countries for long-distance transport to East Asia; hubs for change of axle width are developing more advanced technologies	Convention concerning International Carriage by Rail agreements on uniform rules exist, as well as special provisions (rolling stock, drivers); high potential for accelerating processes at border crossings despite problems with different gauges

Source: compilation of the authors

5.5. *EU added value*

5.5.1. EQ18: What is the added value resulting from the EU level intervention of the Regulation (EU) No 913/2010 compared to what could reasonably have been expected from Member States and infrastructure managers acting at national level?

Introduction

The quantification of EU added value requires either a before-and-after or a with-without comparison. Both approaches cannot be applied using a consistent methodology. Before-and-after comparisons have to take into account the various changes in external factors (e.g., political, legal, transport market and technological changes). With-without comparisons would require a modelling of the actual situation without the existence of the intervention. Therefore, a macro-level analysis based on market performance (i.e., train volumes and modal split), can only be used for a general comparison of the actual situation with expectations at the time the Regulation was introduced. More insight into the potential impact of the Regulation can be gained by analysing key performance indicators. The contribution of the Regulation to the change of key performance indicators can be estimated on the basis of performance comparisons with and without the application of instruments introduced by the Regulation (e.g., pre-arranged paths).

Main findings

(a) Market performance

A first evaluation study from 2008 (see Baseline in Annex G), which was the basis of an evaluation by the Commission (SEC(2008) 3029), came out with very optimistic figures on the forecast volume of international rail freight on the corridors. The annual growth rate was forecast at 3.0%, much higher than the growth rate of total rail freight traffic volume (1.7%). The actual growth figures for 2010-2017 were 0.9% for the total volume. The share of international traffic has remained stable between 2010 and 2016 at around 50% of total rail freight traffic. The modal share of rail freight of land transport decreased from a peak in 2011 (19%) to 16.5% in 2017.[110] The only rail freight transport segment which developed significantly in this time period is intermodal transport. The fact that most pre-arranged paths are used by intermodal services would suggest that this segment could have benefited in particular from the pre-arranged path instrument, although important indicators on the micro-level of operational performance (e.g., punctuality) have developed less favourably.

(b) Performance of rail freight operation

Key performance indicators which are relevant for modal choices made by shippers and forwarders are travel time, punctuality, reliability and costs. The comparison of four freight corridors (see the definition of the baseline in chapter 4) shows that the real journey times of trains running on the freight corridors are slightly lower on the pre-arranged paths compared with other paths.

The punctuality of freight trains allocated to pre-arranged paths has decreased on average for the freight corridors (by 2% at the destination). The punctuality on pre-arranged paths of the four selected corridors is lower compared with other paths (minus 6.5% at the destination).

There is no evidence for the hypothesis that punctuality or reliability have improved through the establishment of the freight corridors.

The change of the cost situation from the viewpoint of users (in the first instance: railway undertakings) can only be estimated qualitatively on the basis of stakeholder surveys. All users who expressed an opinion on this question felt that the freight corridors had had no significant impact on the costs of planning and operating international rail services.

(c) Other effects

The key value added recognised is linked to the first general objective of the Regulation (improving coordination between infrastructure managers and other stakeholders), which has been attained to a large extent as discussed in EQ6. Without the Regulation, it is likely that the level of coordination and collaboration among infrastructure managers and with railway undertaking would have been lower.

What seems a clear value added is that participants in discussion platforms started to speak a common language and to tackle the issues of international rail freight from a common perspective. The share of experiences and best practices is also something that would have been hardly seen without the Regulation. Conversely, tools developed by

[110] Eurostat data exhibited by figures in the Rail Market Monitoring Study (2019) and the Statistical Pocketbook Transport in Figures (2019).

RailNetEurope already existed and would most likely have been developed further; however, the Regulation has clearly pushed these towards a quicker development. This is also confirmed by the approach to capacity allocation through the Timetable Redesign Project, which could provide a breakthrough.

Conclusions

The figures on market and operational performance do not indicate a significant positive impact of the Regulation. As the effects of the Regulation may have been neutralised by adverse external influences, it can be concluded that the Regulation was not able to counteract the negative developments of operational performance and so strengthen the market competitiveness of the international rail freight segment.

On the other hand, value was added as regards the increased level of coordination and cooperation among the different stakeholders, either horizontally (among the same group) or vertically (e.g., infrastructure managers with railway undertakings and terminal managers). It is not possible to draw any conclusions on what could have been expected in the absence of the Regulation, but the effects in term of better coordination and exchange of information (including communication of temporary capacity restrictions) is unlikely to have occurred.

5.5.2. EQ19: To what extent do the issues addressed in the Regulation continue to require intervention at EU level? What would be the progress made in the EU to date in increasing the competitiveness of international rail freight transport without the Regulation?

Introduction

Network industries are characterised by strong interdependencies of activities which can be organised on different hierarchical levels. The problem of the railway industry - compared with other network industries – lies in the fact that the transport of a consignment from origin to destination includes a number of steps involving different agents from different organisations and countries. As no single agent can control the whole chain of the transportation process, the coordination of agents is the most important issue for capacity allocation. This is stated in the general objectives of the Regulation, which are improving cooperation, giving priority to rail freight traffic, simplifying the use of infrastructure and strengthening the integration of rail freight in multimodal transport.

The issues addressed by the provisions introduced by the Regulation are linked to the general objectives and the measures adopted contribute to solving the issues. The following contains a discussion of the extent to which the issues highlighted still require network interventions at the EU level.

Main findings

(a) Market control

Network industries require the control of the market in order to avoid market distortions through monopolistic behaviour and government support for national industries. The Commission has made important steps in this direction by establishing the "fundamental" Directives 1991/440/EEC, 2012/34/EU ("Recast") and the Fourth Railway Package (market pillar). The role of regulatory bodies for the control of competition is defined in the Recast Directive, although further competences with respect to corridor governance will have to be clarified.

(b) Governance

Network industries require an organisational structure for providing and managing the infrastructure and organising the processes of the superstructures. In general, the organisational structure is subdivided by hierarchical levels: the network level, intermediate levels and lower (country, regional) levels. The Regulation only addresses the intermediate level, in this case the railway freight corridors established by countries which are combined with the main rail freight lines. The network level is missing, and the competence of the corridor executive boards is not clearly defined. This leads to an unclear and inefficient allocation of superordinate tasks and the duplication of work for different organisations (here the freight corridors and the core network corridors).

(c) Management

Management boards are defined for the freight corridors which in the first instance are responsible for the allocation of infrastructure capacity to the users (railway undertakings). The Regulation defines particular instruments for capacity allocation through pre-arranged paths and reserve capacity provided by corridor one-stop shops. The evaluation has shown that these instruments are not frequently used. Reasons are that corridor one-stop shops can only offer a small set of services, pre-arranged paths are inflexible partial instruments, and reserve capacity is not meeting the market demand for *ad hoc* allocations. All instruments could be further developed, and many stakeholders suggested that new capacity products should be derived from the Timetable Redesign project.

The main question remaining is whether the type of intervention which is defined in the Regulation will generate enough incentives to achieve a better coordination of rail freight transport across borders. In the present version of the Regulation, the instruments can be regarded as a dedicated EU legal layer which intervenes or even competes with the activities of the national infrastructure managers.

Alternatively, a clear allocation of responsibilities to infrastructure managers, an integration of corridor one-stop shops and follow-up products of the Timetable Redesign Project into the remit of infrastructure managers would increase their motivation to foster international rail freight transport. This transport segment contributes about 50% of their freight business so that pressure from railway undertakings will lead to a prioritisation of international rail freight driven by business interests. The data on operational performance and market success do not support the hypothesis that international rail freight transport can be significantly fostered by establishing a separate legal layer for this transport segment.

(d) Overhead tasks and tools

Tasks which address all corridors or the whole network and the appropriate tools need central coordination at the top of the organisational hierarchy. Such overhead tasks are the development of a framework for the allocation of infrastructure capacity, of instruments (e.g., to be derived from the Timetable Redesign Project), of guidelines for key performance indicators and other issues, of information tools for capacity and traffic management, and of standards for statistical information and reporting. The Regulation allocates all tasks horizontally to the individual freight corridors, while RailNetEurope has taken the role of informal provider of overhead services. The stakeholder consultation revealed that the user side (railway undertakings, terminal operators, forwarders, shippers) would appreciate a more central coordination of superordinate tasks while the agents of the supply side (freight corridor bodies, infrastructure managers) are more satisfied with the present decentralised organisation.

The latter stimulates voluntary arrangements in the case of the perceived needs for coordination beyond the corridors and can be regarded as a good solution for the start-up phase when a common understanding for the creation of harmonised international procedures has to be created in the responsible national organisations. However, in the longer run, the present way of organising superordinate tasks by voluntary agreements and informal overhead services is not sustainable from an economic point of view. The establishment of informal network-wide organisations such as the Network of Executive Boards and the growing importance of network-wide services provided by RailNetEurope underline the growing need for a hierarchical allocation of strategic and management tasks.

Conclusions

The coordination of infrastructure capacity management in the Single European Railway Area is not possible without a clear regulatory framework. It can be questioned from a market perspective whether the interventions defined in the Regulation with respect to specific instruments of capacity management are the best way of harmonising the different national allocation systems. However, the Regulation has initiated a positive process of communication and problem-solving across borders as well as the establishment of international working groups for the removal of bottlenecks and for improving organisational interoperability. All countries involved in the freight corridors currently show a high commitment and willingness to cooperate in developing innovative and effective solutions for capacity management. While this is a benefit and a clear instance of EU added value, the need for a more hierarchically structured scheme of governance is growing.

With respect to the competitiveness of international rail freight transport, the analysis carried out on the effectiveness and efficiency questions and within case study 1 demonstrate that the Regulation has not had a particular effect on the competitiveness of this mode. Operating costs have not changed and travel time and reliability (punctuality) have not seen specific progress yet either.

The main effect and value added cited above is the considerable attention drawn to the sector, which is strategic for the goals of European transport policy. For this reason, it can be assumed that without the Regulation the sector would have suffered more from competition with other modes, such as road transport. The lessons learnt from the first years of the application of the Regulation may accelerate the drive towards more effective solutions or applications of the existing tools. The Timetable Redesign Project, discussed and developed under the lead of RNE, is a product of the rail freight corridors' experience and can be seen as a way of responding to the unsatisfactory result of the flagship tools represented by pre-arranged paths and reserve capacity (see also evaluation question 20).

5.5.3. EQ20: What elements of the Regulation provide the highest EU added value, can they be quantified and what would be the most likely consequence of withdrawing the Regulation?

Introduction

The elements with the highest importance are the provisions for capacity allocation in Chapter IV, Articles 13-22 of the Regulation. The defined institutions and instruments of corridor one-stop shops, pre-arranged paths and reserve capacity are based on convincing ideas, however, they are not frequently used on all freight corridors because they do not meet the market needs. Special developments such as the Handbook on International Contingency Management have brought significant benefits; the IT instruments developed by RailNetEurope also go in the right direction even though they still need to be improved to achieve the standards of some national IT tools.

Furthermore, as stated above, the main value added has to be the improved coordination and collaboration among the stakeholders.

Main findings

The instruments for capacity allocation defined in the Regulation are the corridor one-stop shops, pre-arranged paths and reserve capacity. They are flanked by provisions for traffic management in the case of disturbances, information on corridor conditions and the monitoring of service quality.

The evaluation has shown that the corridor one-stop shop appears to be a convincing idea for facilitating the access of railway undertakings to path managers. However, it is not frequently used, partly because infrastructure managers have to become active again in the case of the re-arrangement of paths allocated originally by the corridor one-stop shop, and partly because the corridor one-stop shop and their instruments are regarded as a separate legal layer. Stakeholders share the opinion that pre-arranged paths are potentially convincing but have the disadvantage that they have to be fixed for the long-term and need re-adjustment in the medium and short-term. This instrument is not flexible enough to meet market needs.

Therefore, the outcome with the highest potential EU value is the ongoing development of the Timetable Redesign Project which may be capable of replacing the above instruments with a flexible IT-based scheme. Combined with the necessary IT developments and interfaces between infrastructure managers and railway undertakings, a flexible and fast path allocation system with interfaces to traffic management will be available.

The Timetable Redesign project is scheduled to be implemented in 2025, but parts could be implemented earlier (pilots are ongoing). Further successful developments have been started by RailNetEurope with information systems, monitoring tools, guidelines and handbooks for cross-corridor application. The handbook of RailNetEurope and of the Platform of Rail Infrastructure Managers in Europe for International Contingency Management provides an outstanding example of the supporting work of organisations of infrastructure managers. Coping with contingencies and temporary disturbances of capacity use are the most challenging areas of international railway capacity management and the Regulation has stimulated important progress in these fields, while there is still the potential for improvement in the field of temporary capacity restrictions.

Conclusions

The highest EU value added of the Regulation consists in bringing the responsible agents of all the countries covered together to work on common solutions which facilitate and improve infrastructure capacity management for rail freight transport. In this sense the products expected from the Timetable Redesign Project (still to come) may be regarded as one of the most valuable outcomes of the Regulation. These products may replace the instruments defined in the provisions of the Regulation which appear convincing but are not adjusted to market needs.

Furthermore, the Regulation has stimulated the development of IT-based tools by RailNetEurope which improve the regular capacity allocation work as well as the treatment of contingencies and temporary disturbances. The impact of withdrawing the Regulation could be a relapse into uncoordinated national capacity management systems and the reduction of cooperation on the level of technical management and organisational interoperability.

5.5.4. EQ21: What is the value added, e.g. in terms of coordination, legal certainty, complementarities and synergies, of the 'rail freight community' involved in the activities resulting directly or indirectly from the implementation of the Regulation?

Introduction

The evaluation question requires an understanding of the value added of having built a "rail freight community". As seen above, this is recognised as one of the main outcomes of the Regulation.

Ministries, regulatory bodies, infrastructure managers, railway undertakings, terminal operators and other stakeholders currently cooperate with the management of international rail freight transport. This has led to a better transnational understanding and to administrative synergies.

Main findings

The executive boards, composed of officers from the national Ministries of Transport, have contributed to increasing the support from the political side. This was successful as the declarations of Rotterdam, Vienna and Leipzig demonstrate. The executive boards have formed an informal network which underlines that more synergies can be generated by working together at the network level.

The positions in management boards are filled with officers from national infrastructure managers. Their umbrella organisations Platform of Rail Infrastructure Managers in Europe, European Rail Infrastructure Managers and RailNetEurope have been most active in developing guidelines, handbooks and performance indicators. RailNetEurope has also developed information instruments, such as the path coordination system, the charging information system and the train information system. RailNetEurope is serving as the main data generator for the freight corridors. The management boards have formed working groups to prepare specific solutions for problems such as border crossing barriers and organisational interoperability.

Railway undertakings and terminal operators participate in advisory groups and provide the links to customers, e.g. forwarders and shippers. These user groups have prepared sector statements in which principles and priorities for the treatment of problems are suggested. The rich feedback in response to the communications of the Commission, in terms of the open public consultation, targeted interviews or position papers, underline the strong interest of the stakeholder community in the freight corridors issues.

Many meetings have been organised and regular communications established, which has resulted in a "European rail freight community". The way of thinking has changed, with a change of focus from a national to an international perspective. This has also contributed to increasing the confidence in agreements – beyond legislation – and the facilitation of processes concerning international train path allocation.

The freight corridors' bodies are motivated to turn obstacles that impede efficiency into objects that foster administrative cooperation. The view from the supply side is that the decentralised organisation of the freight corridors was successful in creating a positive atmosphere for international cooperation, even though the economic evaluation raises doubts that this will be enough to substantially improve the operational performance and market results, as was intended by the Regulation and as is necessary for the success of EU environmental and economic policy.

Conclusions

The Regulation has contributed to a better understanding of national organisations, which has created more confidence and certainty – beyond formal legislation. The development towards a "European rail freight community" can be regarded as the most valuable achievement of the Regulation so far. Therefore, one can expect strong support from stakeholder groups in that regard when the Regulation is next revised.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1. Relevance

The fragmented European railway system needs harmonisation and modernisation. The Regulation addresses the management of infrastructure capacity for international rail freight transport, which is a highly relevant issue. It furthermore addresses the active cooperation of national infrastructure managers and governmental organisations, which is a precondition for a revival of European railways.

Following the overarching goal of establishing a European network for competitive rail freight made up of freight corridors, the Regulation has set the general and specific objectives of improving cooperation, giving priority to rail freight traffic, simplifying the use of rail infrastructure and strengthening the integration of rail freight in multimodal transport. The objectives have not changed over time and are still highly relevant. The question remains whether some of the specific objectives could have been addressed in a more comprehensive way by other EU legislation (e.g., planning investments and meeting the needs of interoperability).

The objectives of the Regulation remain relevant in view of their contribution to the goals of European transport policy (White Paper of 2011) and the economic/environmental strategies of the EU (summarised and tightened by the Green Deal Communication, 2019). However, while the objectives of the Regulation are compatible with the goals of transport, economic and environmental/climate policy, its actual contribution is marginal. The reasons for this are the small market segment served by rail freight transport and the small changes delivered by the instruments introduced by the Regulation.

The scope of the Regulation is defined as setting the organisational framework and defining the areas of intervention for 11 freight corridors (nine defined in the Annex and two added in 2017/18). The supervisory and capacity management tasks are clearly allocated to the executive and management boards, although strategic tasks (e.g., investment planning) overlap with other regulations. Overhead functions and cross-corridor coordination have not been defined in the Regulation. These functions have partly been taken up by informal and voluntary activities, as in the case of the Network of Executive Boards for governance and of railNetEurope for management issues. Nevertheless, overhead tasks and coordination at the network level are not clearly allocated which causes overlaps of work and inconsistent outcomes (e.g., transport market studies, development of IT tools). The role allocated to railway undertakings and terminal operators in advisory boards does not make use of their potential as market service providers.

The areas of intervention involve the establishment of service organisations (i.e., corridor one-stop shops) and capacity products (i.e., pre-arranged paths and reserve capacity). While the underlying logic for the areas of intervention appears convincing, in particular at the time of introduction of the Regulation (regarding the fragmented patchwork of different capacity allocation systems in the EU Member States), their lack of success indicates that their operational and market relevance is still low. The introduction of a separate legal layer for international rail freight transport on the defined freight corridors has been criticised by stakeholders from the beginning because it leads to idle capacity, an increase in administrative work (in the case of the frequent needs for the rearrangement of allocations) and complicates the adjustment of capacity products according to the needs of the market.

External developments in trade, transport logistics, technology and public policy require flexible adjustments of capacity management, using modern tools for path allocations and traffic control. While the capacity management tools (i.e., the pre-arranged paths and

reserve capacity) are defined in a very specific and rigid way, the governance structure needed to respond to the changing external factors is defined only very roughly. The roles of RailNetEurope for developing rules, guidelines and network-based IT tools or the role of the user side (railway undertakings, terminal operators) in the permanent adjustment of management and operation practices are not defined in the Regulation.

6.2. Effectiveness

The evaluation shows that the articles have been implemented fully, or partially, throughout chapters II, III and IV of the Regulation. The evaluation shows that Member States and infrastructure managers have fulfilled the provisions of the Regulation in a formal sense and within their actual scope. However, in the context of the achievement of the general, specific and operational objectives, the effectiveness of the implementation of the provisions has only been moderate (partial) in some aspects and only limited in others.

In general, the services and capacity products offered by the freight corridors fulfil the objectives of the Regulation, but their limited uptake by the market indicate suggests that they do not match customers' needs sufficiently well. The rules and processes at national level still hamper international operations, although different approaches and pilot projects that have been conceived at the corridor level show a concrete commitment to pursue the objectives of the Regulation.

Governance structures have been established according to the provisions of the Regulation. The type of organisational structures implemented does not seem to impact on its effectiveness, which is instead influenced by the efforts deployed by the parties involved, especially in terms of the resources devoted (i.e., human and financial) and the willingness to look beyond the national perspective. The participation of railway undertakings and terminal managers and owners varies depending on the freight corridor. In general, a good level of interaction has been found to exist, but the interest and participation of the terminal managers is low due to their limited resources and different objectives. The effectiveness of the advisory groups may be hampered by the fact that operators are involved on a consultative basis only. Stakeholders, such as buyers, shippers and customers, are perceived to be missing from the process.

Although the coordination of investments along the freight corridor is important, the investment plan consists of a mere collection of information gathered from infrastructure managers. The effectiveness of the activities of the freight corridor managers is demonstrated when they act as sectoral experts bringing specific knowledge of relevant issues (i.e., operational and physical bottlenecks).

The capacity products offered (i.e., pre-arranged paths and reserve capacity) are not adequate. This is due to a number of factors. First, the quantity of capacity allocated is limited and linked with that made available by the infrastructure managers on a voluntary basis. Second, corridor one-stop shops are resource-constrained and do not have control over subsequent changes to enable the capacity offered to be modified (so hampering the potential for simplification and the ability to market capacity). Third, there is no significant added value of the paths offered compared to the paths offered by infrastructure managers. Overall, the operators of freight services do not have an actual incentive to submit requests for pre-arranged paths, which means that the capacity demanded represents just a tiny portion of the total international capacity.

The request for reserve capacity is negligible. Although the 60-day deadline of the Regulation has been halved in the framework for capacity allocation, this change is considered not to be ambitious enough to meet *ad hoc* requests that are typically submitted just few days before a train run.

The field research shows that two quality criteria are particularly important for the paths offered. First, the certainty of safeguarding the capacity for freight trains from passenger services, and technical capacity restrictions for works, the coordination and scheduling of which need to be substantially improved. Second, flexibility, as freight service operators do not know when an actual need for a path may materialise. In general, the transport of intermodal units is more stable in the medium- or long-term, whereas that of bulk goods is less predictable.

To better meet the needs of the market, the fixed pre-arranged path product has evolved towards more flexible solutions. However, this has not been done by the freight corridors acting in a harmonised way, and has resulted in a basket of products with varying ranges of flexibility. Positive developments include pilot projects that are designed to meet short deadlines even though the products offered do not seem to have improved the situation.

Currently, the corridor one-stop shop is perceived as being an extra layer for the infrastructure manager. Another aspect preventing applicants from requesting capacity via the corridor one-stop shop is related to the path coordination system tool. Users regard this tool as not offering all of the necessary functionalities and as not being sufficiently user-friendly. A lack of interfaces between the path coordination system and infrastructure managers' systems is another underlying limiting factor.

The management of the capacity on overlapping sections of the freight corridors is challenging and requires cross-corridor coordination. A collaborative corridor one-stop shop model for capacity allocation on overlapping sections has been established between the Orient/East-Med and North Sea-Baltic freight corridors, with a view to ensuring adherence to the network nature of international rail freight traffic.

Some findings suggest that the positive trend in international intermodal rail transport might, to some extent, be related to the implementation of the Regulation. Isolating changes that are strictly linked to the Regulation is a challenging exercise as exogenous factors may intervene; however, a rough estimation based on the difference of commercial speed observed between pre-arranged and other paths for a sample of connections suggests that a net increase of international intermodal freight trains of around 0.1%-3.3% can be estimated as being due to some freight corridors. A lack of data does not allow for a consistent trend of the number of trains before and after the implementation of the Regulation to be identified, but it can be assumed that its effect could also be of the same order of magnitude for the other freight corridors.

The Regulation seems to have had a stronger effect in terms of the improved coordination that has been achieved between the concerned stakeholders and the freight corridors. There is a common view that the Regulation has allowed for the development of an international community to share knowledge, exchange best practices and experiences and harmonise approaches. In addition, the Network of Executive Boards was created following negotiations for a framework for the allocation of infrastructure capacity, and corridor one-stop shop managers have started close cooperation by establishing the corridor one-stop shop community.

Cooperation is also in place with core network corridors, although criticism was raised on a perceived duplication of work and responsibilities, which especially holds true for investment coordination and the elaboration of the transport market study. Examples of positive synergies with core network corridors were implemented by two freight corridors.

In terms of operations, the initiatives, measures and actions have mainly focussed on the day-to-day traffic management and traffic management in the event of a disturbance. Working groups and procedures at border crossing sections have been established for the

procedures related to traffic management in regular situations, but the activities implemented have impacted only to a small extent or not at all on the performance of international freight trains. For traffic management in the event of a disturbance, the freight corridors have adopted common targets for punctuality and/or traffic management and have cooperated to develop the International Contingency Management Handbook. With respect to the priority rules between the different types of traffic, national rules still prevail.

The coordination between railways and terminals is a very complex area involving many actors, activities, contractual responsibilities and context-specific governance. A major issue hampering coordination is the poor reliability of the estimated time of arrival and punctuality of trains. Terminals do not receive sufficiently reliable information about the actual status and position of freight trains running on the railway infrastructure. An EU co-funded pilot project has been developed in that regard, but the freight corridors are not directly involved. It is worth noting that the freight corridors developed (i) two studies on last-mile issues and (ii) one pilot project for a pioneering offer of terminal slots harmonised with pre-arranged train paths, which provide examples of the freight corridors' attempts to improve the situation.

The added value of the information provided to users is judged to be moderate or small for the planning and operation of freight services. The corridor information document has been developed according to common guidelines, but for some information the content varies significantly and is not perceived to be user-friendly. In addition, some of the information provided is redundant compared to that already provided at the national level. This may require the content of the information document to undergo a process of simplification.

6.3. Efficiency

The costs of establishing and operating the freight corridors are covered by EU contributions and by membership fees paid by the concerned infrastructure managers and allocation bodies.

The data gathered show that between 2011 and 2016, the eligible costs for establishing the freight corridors amounted to some EUR 55 million, EUR 35 million (64%) of which was covered by EU funding. EU contributions were also granted for three preparatory studies to set up the freight corridors. The eligible costs of these preparatory studies amounted to EUR 18.7 million, EUR 9.3 (50%) million of which was covered by EU contributions.

In terms of the efficiency of the EU contribution, an estimated figure was arrived at on the basis of the data relating to the offered and requested capacity. The figures indicate that the average EU contribution per million of offered path-km is EUR 33 thousand, while the contribution per million of requested path-km is EUR 105 thousand. The Scandinavian-Mediterranean freight corridor shows the best efficiency performance for both offered and requested capacity (i.e., EUR 18 and 62 thousand per million of path-km, respectively).

For the stakeholders, the data gathered from the field research reveals one-off costs associated with the implementation of the Regulation in the lower range of EUR 0-20,000 for the majority of cases.

As far as ongoing costs are concerned (i.e., labour, travel and other), the data provide different figures for different stakeholder groups. For customers and terminals, the ongoing costs are in the lower range of EUR 0-20,000. For infrastructure managers, the ongoing costs reported are significantly higher and range between EUR 130 thousand and EUR 5.9 million. The difference in magnitude depends on the resources allocated to the activities

related to the freight corridors, which can vary from just a few people up to 35 persons for a major infrastructure manager involved in several freight corridors.

Ongoing costs for day-to-day activities of the permanent management office of the freight corridor are reported at being between EUR 500 thousand and EUR 2 million. The main cost categories include staff, travel and other expenses (e.g., studies, fee for infrastructure manager experts attending working groups and some administrative items).

According to the opinions gathered from the field, the administrative burden related to the reporting activities of freight corridors is considered to be high and increases the workload of the permanent management offices quite substantially. As the level of reporting activity might hamper other more important tasks of the office, some freight corridor representatives have called for a simplification of reporting activities.

The benefits resulting from the implementation of the Regulation are not quantifiable. As estimated when defining the evaluation baseline, the number of additional international freight trains as a result of the higher commercial speed of the pre-arranged paths compared to the other paths is relatively small. One reason why this result must be viewed with caution is because the performance of trains running on pre-arranged paths is not regularly and significantly higher compared to those running on other paths.

The positions of different stakeholder groups have been examined, taking into account the responses gathered from the field research. For most of them, the implementation of the Regulation has yielded the following qualitative benefits:

- an increased level of cooperation and coordination between actors;
- creation of a platform for discussion, where information, experiences and best practices can be exchanged, problems shared and solved together;
- improvements in the knowledge of the market and the possibility of benchmarking;
- greater clarity in the rail freight industry;
- development of harmonised guidelines; and
- an improved level of coordination between infrastructure managers when searching for alternative routes, constructing new train paths and analysing recurring delays.

Specifically, in terms of financial benefits, the stakeholders concerned state that nothing has changed. The cost of organising and operating international rail freight services has not changed in a tangible manner as a consequence of the adoption of the Regulation.

By contrast, stakeholders can see some benefits that may arise. On the one hand, among the factors influencing the relationship between costs and benefits, stakeholders have identified transport operating costs and journey time as the prevalent areas where costs could potentially be reduced. On the other hand, they regard traffic management in the case of a service disruption, coordination among stakeholders, interoperability and the availability of pre-arranged capacity, as the areas with the greatest potential to increase benefits.

6.4. Coherence

The Regulation is compatible with the goals of economic, climate and digital policy publications of the Commission. However, the influence of its implementation on general policy goals and targets is limited. Fostering the application of new network-based information applications would increase the effectiveness of the freight corridor instruments and make rail freight transport more interesting for the digital sector. The Timetable Redesign Project is fully compatible with the Digital Single Market Strategy and appears promising in terms of providing a platform for standardised digital services for rail capacity management.

The Regulation is widely compatible with EU regulations and directives for the railway sector. Most overlapping provisions with legislation approved after 2010 clarify the tasks and the responsibilities for activities and implementation. While such overlaps do occur, they are not difficult to handle in practice. This concerns for instance the allocation of responsibility for managing temporary capacity restrictions to the infrastructure managers in the Recast Directive 2012/34/EU. In the case of international rail freight, the infrastructure managers represented in a freight corridor can establish an agreement for cooperation. This is considered in the Handbook of RailNetEurope for International Path Allocation (2019).

The only serious overlaps which lead to inefficient duplication of tasks and work have been identified in connection with the TEN-T Regulation. The freight corridors widely overlap with the TEN-T Regulation with respect to investment planning, the European Rail Traffic Management System and interoperability deployment. The TEN-T Regulation requires coordination with the freight corridors in Article 48, but the means of coordination and the responsibility of the institutions is not specified. Other regulations and directives that apply to the railway sector are the Combined Transport Directive 92/106/EEC, the Interoperability Directive 2016/797/EU, the Telematics Application Regulation (EU) 1305/2014 and the Fourth Railway Package, all of which broadly complement the Regulation.

The funding schemes of the EU for railway investments are generally not separated into funds that support either passenger or freight transport, although there is a gap in relation to financing combined transport. Financing initiatives dedicated to combined transport started with the Marco Polo programme 2007-2013. However, this programme was not continued after 2013 and funding was transferred to the Connecting Europe Facility. The change to Connecting Europe Facility-based support has led to reduced funding for intermodal freight transport. The Connecting Europe Facility is co-funding TEN-T investments and has allocated 72% of its allocated transport investment funding to the railways.

However, considering all EU funding sources, including the European Investment Bank, spending on road projects predominates, in particular through the European Regional Development Fund and the European Investment Bank. Funding for rail research and development has improved through the H2020 Framework Programme, in particular through the establishment of the Shift2Rail programme; however, aggregating the amount spent on research from all public and private sources (e.g., vehicle manufacturers, technology suppliers, the software industry), road research receives by far the highest amount of financial support.

According to the subsidiarity principle, Member States have competence for the national parts of investment planning. Despite the fact that EU directives and regulations, e.g. on interoperability, are transposed into national law, Member States are widely independent with respect to decisions on investment projects. Their planning and prioritisation can be influenced effectively by co-financing provisions. Differences in terms of allocating capacity to passenger and freight transport are mainly caused by national policy decisions. International railway connections to non-EU neighbours and Asian countries underline the importance of common rules for the use of infrastructure in international traffic and the simplification of liability regimes. The EU acceded to the Convention concerning International Carriage by Rail in 1999. Border processes can be further simplified, e.g. several days could be saved on the routes from the EU to China. The Regulation is coherent with these international conventions and agreements although it does not address these issues explicitly.

6.5. EU added value

Harmonising the fragmented European railway system is a big challenge in the progress towards a Single European Railway Area on which the Commission has been working over

the last 30 years. This includes not only the provision of infrastructure, but also the management of capacity. The Regulation is embedded in a host of directives and regulations aimed at reorganising the European railway sector. It addresses the coordination and management of capacity allocation for the defined rail freight corridors by establishing service institutions in the form of corridor one-stop shops and introducing standardised instruments for capacity allocation in the form of pre-arranged paths and reserve capacity with the aim of prioritising international rail freight transport. In this context transnational organisations have been established at the corridor level which bring together infrastructure managers and the rail transport divisions of national governments to solve the problems of corridor management and governance. This has stimulated European cooperation and the willingness to develop common solutions for the problems faced by rail freight transport that cross borders.

The development of a common European rail freight community is reflected in activities beyond the provisions of the Regulation, for instance the establishment of working groups, the preparation of cross-corridor agreements and the network-wide activities of RailNetEurope to develop guidelines, handbooks, performance indicators and IT tools. This coincides with a strong support from stakeholders on the market side such as railway undertakings, terminal operators, forwarders and shippers, represented by their associations, and from the political side as demonstrated by the declarations of Rotterdam, Vienna and Leipzig. The creation of a common awareness amongst stakeholders that rail freight transport can only develop successfully if all involved parties cooperate actively, can be regarded the biggest EU added value achieved by the Regulation so far.

These positive reactions of involved stakeholders are a necessary condition for achieving the overarching goal of making rail freight transport competitive and increasing its modal share. But to be sufficient, the provisions of the Regulation should improve on the performance of operations for achieving productivity gains. Comparing performance indicators such as average speeds, punctuality and reliability on freight corridors over time, only little progress (in terms of speed) or no progress (in terms of punctuality) can be observed. Comparing these indicators for routes within the freight corridors with routes outside of the freight corridors, the freight corridors' routes do not prove to be the better alternatives. This raises the question of whether the instruments provided by the Regulation are facilitating management processes and meeting market needs.

The introduction of corridor one-stop shops follows an intuitive logic for facilitating the administrative processes for users, in general the railway undertakings. In practice, however, it can complicate the administrative processes in the case of rearrangements which occur frequently. Pre-arranged paths and reserve rapacity are defined as rigid instruments which force infrastructure managers to reserve capacity which might be left idle. As a result, some freight corridors have changed to using more flexible pre-arranged path products. But apart from a few exceptions, infrastructure managers have little incentive to make extensive use of the freight corridors' instruments.

This shows that the EU added value of the provisions of the Regulation for capacity management is limited. A positive impact can be identified insofar as the application of the provisions enabled the gathering of experience of dedicated service institutions and capacity management products for international rail freight transport. This experience provides the platform for the development of more flexible and market-oriented instruments, e.g. in the course of the Timetable Redesign Project, and the development of modern IT instruments at the network level.

The Regulation also addresses the strategic issues of indicative investment planning and the deployment of interoperability. The provisions even include requirements for cost-benefit analysis and financial planning. However, the freight corridor bodies have neither

the resources for strategic planning – which in most cases includes rail passenger and freight transport – nor the competence for its implementation. While the strategic issues as such are most relevant, their integration into the Regulation have not addressed the relevant decision-making authorities.

6.6. *Recommendations*

Based on the results of the evaluation, this section presents the recommendations for possible follow-up work to improve the current situation. The recommendations are presented in accordance with the main chapter headings of the Regulation.

Governance of the freight corridors

- **Executive and management boards**: the freight corridors were fundamentally designed to bring together the Member States to work on a common cause. Nevertheless, national priorities, interests and fragmentation throughout the decision-making process still hamper the concept and functioning of the freight corridors. The competent national ministries and infrastructure managers should step up their engagement towards achieving actual change. A clearer definition of the objectives of the Regulation is necessary, narrowing the scope of the actions by focusing on the main tasks of capacity allocation, traffic management and operation. Concrete actions should make the freight corridors more market-oriented, streamlined and harmonised.
- **Permanent management office:**
  - → managing directors are detached senior employees of the infrastructure managers, who should enjoy full independence and act as the equals of their national counterparts to effectively carry out their coordination role before the executive and management boards;
  - → budget levels and human resources are insufficient to fulfil the statutory tasks of the freight corridors. Adequate resources should be made available so they can perform every task to a high level of proficiency. In particular, this should be considered for the resources allocated to the corridor one-stop shop in order to ensure an efficient and responsive path allocation.
- **Reinforce the role of the advisory groups**: the advisory groups are based on an invitation-only principle that makes the communication one-way and provides the stakeholders with limited influence on decisions that have already been taken.
  - → The advisory groups should be more strongly formalised, harmonised and represented in the executive and management boards. A stronger and more strategic cooperation would allow for more opinions of the stakeholders to be taken into account and make the decision-making process more effective while at the same time improving the ability of infrastructure managers to respond to market needs and find common solutions.
  - → The advisory groups should be more open to the market players, by inviting the participation of buyers of international rail freight services (i.e., shippers, intermodal operators and forwarders) and the maritime sector.
  - → The low participation of terminal managers and owners should be addressed by increasing the attractiveness of the meetings by sharing the objectives in advance.
- **RailNetEurope**: the role of this structure should be strengthened by also making the guidelines developed in relation to the implementation of the Regulation mandatory for all the players.
- **Overhead bodies**: international rail freight is network-based by nature, an aspect taken into account by the overlapping sections of the designated lines of the freight corridors. To technically address this characteristic, the opportunity to introduce

network-based bodies for overhead capacity allocation and the development of IT tools should be explored.

- **Transport market studies:** reduce the duplication of work with the same activity of the core network corridors and develop more network- and market-oriented transport studies.
- **Reporting requirements:** a review of the reporting requirements for the freight corridors is needed as experience has shown that the primary information lies in the hands of the infrastructure managers. The information on the conditions of use of the freight corridor can be substantially restricted, for example to the procedures for capacity and traffic management.

Investment in the freight corridor

- **Legislative framework:** additional policies have been introduced after the adoption of the Regulation, raising questions concerning the allocation of the responsibility of:
  → the freight corridor management boards for strategic tasks on investment planning (see Article 11 of the Regulation and Article 48 of the TEN-T Regulation);
  → managing the temporary capacity restrictions (see Article 12 of the Regulation and Annex VII of Commission Delegated Decision (EU) 2017/2075 of 4 September 2017 replacing Annex VII to Directive 2012/34/EU).

  A clear definition of the role of the freight corridors for such strategic tasks would help to focus their activities on the coordination of capacity management.
- **Technical capacity restrictions**: although this is a very complex issue, harmonising the technical capacity restriction rules is a precondition to improving capacity allocation and traffic management. The freight corridors should take the lead in this area, without prejudice to the competence of the infrastructure managers regarding the planning and funding of rail infrastructure work.

Management of the freight corridor

- **Capacity offer:** the infrastructure managers can offer capacity for international freight trains at the national level, a condition which implies that the quantity of capacity allocated by the freight corridors depends on the international capacity transferred by the infrastructure managers on a voluntary basis. To avoid the unclear allocation of responsibility, the right to allocate paths for international freight trains should be fully transferred to the freight corridors or to a supranational entity acting as European one-stop shop providing paths for all international freight trains.
- **Capacity products:**
  → the pre-arranged paths are almost universally judged as not meeting market needs with respect to the quality criteria of flexibility and certainty.
    - the introduction of more flexible products has been appreciated but these still need serious improvements and harmonisation;
    - pre-arranged train paths should be fully guaranteed and safeguarded by infrastructure works.

  → the pre-arranged paths do not offer a competitive advantage with respect to other capacity products offered by infrastructure managers. A revised approach to capacity allocation should be considered incentivising the railway undertakings and other applicants with premium pre-arranged paths that offer concrete commercial benefits (i.e., reduced access charges) or real operational priority.
  → reserve capacity (i.e., *ad hoc*) is not a useful product, as it is implemented simply by offering guidance to the customer to find solutions at a later point in

time. However, when the Timetable Redesign Project is implemented and rolling planning is offered, this measure would become obsolete. A gradual implementation of rolling planning means that the reserve capacity should be gradually replaced.

→ support for the development of flexible algorithms for path allocation, e.g. based on the outcomes of the Timetable Redesign Project.

- **IT application:** the use of the path coordination system is not mandatory and is limited to the initial path request. Subsequent changes that are necessary during the timetable period need to be made via national path systems instead of the path coordination system, resulting in an additional workload for capacity applicants. The development of a quality-ensured version of the path coordination system should prevent false interpretations and inconsistencies and provide users with a more user-friendly tool. In addition, the path coordination system should provide a complete interface with national systems.
- **Traffic management:** staff at the railway undertakings normally work with their own national infrastructure managers and in cooperation with railway undertakings from other Member States. Language-related problems should be addressed where language skills are inadequate to deal with operations.
- **Access to terminals:** the market demands the creation of end-to-end transport chains, but the possibility of inter-related path construction between railways and terminals is still at the pilot project level. Coordinated and harmonised pre-arranged paths with terminal slots, including shunting operations and loading/unloading time, should be fully established as part of the capacity allocation process.
- **Data and information exchange:** support for improving tracking to allow access to reliable information on the estimated time of arrival of trains at terminals. Introduce a unique train number to unequivocally identify international freight trains running between national railway networks. Make it an obligation for infrastructure managers to share data with railway undertakings, terminal managers and owners, and shippers in order to improve the overall efficiency of the transport process.

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